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BULLETIN *of the* UNIVERSITY *of* NEW HAMPSHIRE

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The Catalogue Issue of the University

The Report of the President Issue

The Financial Report Issue

The Catalogue Issue of the Summer Session

The Catalogue Issue of the Graduate School

The Catalogue Issue of the Educational Films

and other publications of the University of New Hampshire

Correspondence in regard to the University should be addressed to the following:

General Information, General Information

Admission, Catalogue, and Summer Session, Director of Admissions

Alumni Activities, Alumni Office

General Extension, Director of General Extension Service

Graduate School, Dean of the Graduate School

Two-Year Course in Agriculture, Office of Applied Farming

CALENDAR

1948

JULY						
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NOVEMBER						
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DECEMBER						
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FEBRUARY						
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MARCH						
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JUNE						
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UNIVERSITY OF NEW HAMPSHIRE CALENDAR

1948-49

1948 SUMMER SESSION

June 28	Monday	Summer School Registration
July 5	Monday	Holiday (Classes make up July 10)
Aug. 6	Friday	First 6-Week Summer Session closes
Aug. 9	Monday	Second 6-Week Summer Session starts
Sept. 6	Monday	Labor Day, holiday
Sept. 17	Friday	Second 6-Week Summer Session closes

FIRST SEMESTER 1948-49

Sept. 21	Tuesday	Orientation Week begins
Sept. 27	Monday	Registration Day
Sept. 28	Tuesday	Classes begin at 7:30 A.M.
Oct. 5	Tuesday	University Day — no afternoon classes
Nov. 16	Tuesday	Mid-Semester Reports to be filed, 5 P.M.
Nov. 24— Nov. 29	Wednesday- Monday	Thanksgiving Recess — Wednesday, 12 noon, to Monday, 7:30 A.M.
Dec. 18	Saturday	Christmas Recess begins at 12 noon

1949

Jan. 3	Monday	Christmas Recess ends at 7:30 A.M.
Jan. 22	Saturday	Preparation Day, no classes
Jan. 24— Feb. 3	Monday- Thursday	Examination Period

SECOND SEMESTER

Feb. 7	Monday	Classes begin at 7:30 A.M.
Feb.	Fri.-Sat.	Winter Carnival — no classes Friday, 1 P.M., to Monday, 7:30 A.M.
March 8	Tuesday	Town Meeting, classes excused 10 A.M. to 1 P.M.
March 29	Tuesday	Mid-Semester Reports to be filed, 5 P.M.
April 9	Saturday	Spring Recess begins at 12 noon
April 18	Monday	Spring Recess ends at 7:30 A.M.
May 28	Saturday	Preparation Day, no classes
May 30	Monday	Memorial Day, holiday
May 31— June 10	Tuesday- Friday	Examination Period
June 12	Sunday	Commencement
June 17—18	Friday- Saturday	Alumni Week End

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BOARD OF TRUSTEES

HIS EXCELLENCY, GOVERNOR CHARLES M. DALE, A.B., LL.B., LL.D., *ex officio*

PERLEY I. FITTS, B.S., COMMISSIONER OF AGRICULTURE, *ex officio*

PRESIDENT ARTHUR S. ADAMS, SC.D., *ex officio*

HARRY D. SAWYER
September 15, 1926 to June 30, 1950
Woodstock, N. H.

FRANK W. RANDALL, B.S., *President*
July 1, 1936 to June 30, 1948
Portsmouth, N. H.

*ERNEST W. CHRISTENSEN, B.S., *Secretary*
July 1, 1940 to June 30, 1948
Dover, N. H.

JEREMY R. WALDRON, M.S.
April 12, 1944 to June 30, 1950
Portsmouth, N. H.

ARTHUR E. MOREAU, A.M.
September 14, 1944 to June 30, 1951
Manchester, N. H.

LAURENCE F. WHITTEMORE
September 14, 1944 to June 30, 1948
Pembroke, N. H.

MARY S. BROWN
December 20, 1944 to June 30, 1951
Center Sandwich, N. H.

AUSTIN I. HUBBARD, B.S.
December 20, 1944 to June 30, 1949
Walpole, N. H.

STANLEY M. BURNS, LL.B.
July 1, 1945 to June 30, 1949
Dover, N. H.

*WILLIAM E. KNOX, B.S.
July 1, 1947 to June 30, 1951
Scarsdale, N.Y.

*Elected by Alumni.

OFFICERS OF ADMINISTRATION

ARTHUR S. ADAMS, SC.D., *President of the University*

WALTER E. BATCHELDER, M.D., *University Physician and Director of the Student Health Service*

DORIS BEANE, M.A., *University Recorder*

EDWARD Y. BLEWETT, M.A., *Dean of the College of Liberal Arts*

THELMA BRACKETT, A.B., *Librarian*

ROBERT F. CHANDLER, JR., PH.D., *Dean of the College of Agriculture and Director of the Agricultural Experiment Station*

JEREMIAH A. CHASE, M.ED., *Director of Placement*

WALTON E. DEVINE, *Assistant Treasurer*

ERIC T. HUDDLESTON, B.ARCH., *Supervising Architect*

HAROLD I. LEAVITT, M.A., *Superintendent of Properties*

RAYMOND C. MAGRATH, *Treasurer*

WILLIAM A. MEDESY, M.F., *Dean of Men*

WILLIAM L. PRINCE, B.A., *University Alumni Secretary*

FRANCIS E. ROBINSON, M.A., *University Editor*

EVERETT B. SACKETT, PH.D., *Dean of Student Administration*

LAUREN E. SEELEY, M.E., *Dean of the College of Technology and Director of the Engineering Experiment Station*

HERMON L. SLOBIN, PH.D., *Dean of the Graduate School*

HENRY B. STEVENS, A.B., *Director of the General Extension Service*

ELMER D. WEST, ED.D., *Director of Admissions and Counseling and Director of Summer Sessions*

RUTH J. WOODRUFF, PH.D., *Dean of Women*

THE UNIVERSITY FACULTY AND STAFFS

ARTHUR S. ADAMS, *President of the University*

Graduate, U. S. Naval Academy, U. S. Submarine School, 1918; M.A., University of California, 1926; Sc.D., Colorado School of Mines, 1927. LL.D. (Hon.), Muhlenberg College, 1944; Sc.D. (Hon.). Union College, 1944; D.C.L. (Hon.), University of the South, 1945; Dr. Eng'g. (Hon.), Stevens Institute of Technology, 1945; D.H.L. (Hon.), Hobart and William Smith Colleges, 1946; Dr. Eng'g. (Hon.), Rensselaer Polytechnic Institute, 1947.

BATCHELDER, LYMAN J., *Instructor Emeritus in Mechanical Engineering, Woodshop*
(1915-)

BAUER, GEORGE N., *Professor Emeritus of Mathematics*
B.S., University of Minnesota, 1894; M.S., University of Iowa, 1898; Ph.D., Columbia University, 1900. (1924-)

BISBEE, HARLAN M., *Associate Professor Emeritus of Education*
A.B., Bowdoin College, 1898; A.M., Harvard University, 1905. (1928-)

HENDERSON, OREN V., *Registrar Emeritus*
Valparaiso University. (1914-)

MACFARLANE, JAMES, *Instructor Emeritus in Floriculture.* (1915-)

†O'KANE, WALTER C., *Professor Emeritus of Economic Entomology*
B.A., Ohio State University, 1897; M.A., *ibid.*, 1909; D.Sc. (hon.) *ibid.*, 1932. (1909-)

RITZMAN, ERNEST G., *Research Professor Emeritus of Animal Husbandry*
B.S.A., Iowa State College, 1903; M.S. (Hon.), University of New Hampshire, 1928. (1915-)

RUDD, HERBERT F., *Professor Emeritus of Philosophy*
A.B., Central College, Iowa, 1900; B.D., University of Chicago, 1903; M.A., *ibid.*, 1913; Ph. D., *ibid.*, 1914. (1922-)

SMITH, LUCINDA P., *Associate Professor Emeritus of English*
A.B., Colby College, 1901; M.A., Boston University, 1934. (1919-)

SMITH, MELVIN, M., *Associate Professor Emeritus of Chemistry*
A.B., Colby College, 1890; A.M., *ibid.*, 1893. (1917-)

TAYLOR, FREDERICK W., *Director Emeritus of Agricultural Service Departments of the College of Agriculture*
B.S., Ohio State University, 1900. (1903-)

†Indicates part time devoted to Agricultural Experiment Station.

*Indicates part time devoted to Extension Service.

UNIVERSITY OF NEW HAMPSHIRE

- ABBOTT, HELEN D., *Head Cataloguer*
A.B., Wheaton College, 1929; S.B. in L.S., Simmons College, 1930;
A.M., Middlebury College, 1939. (1943-)
- *†ABELL, MAX F., *Assistant Professor of Agricultural Economics*
B.S., Cornell University, 1914; Ph.D., *ibid.*, 1924. (1926-)
- ADAMS, ELOI A., *Agricultural Agent in Strafford County*
B.S., New Hampshire College, 1918. (1919-)
- ADKINS, MILDRED, *Lecturer in Zoölogy*
B.A., Teachers College, Columbia University, 1926; M.A., *ibid.*,
1929. (September 1, 1947 — February 7, 1948)
- AHERN, CORNELIUS J., *Agricultural Agent in Cheshire County*
B.S., University of New Hampshire, 1934. (1936-)
- ALEXANDER, NORMAN, *Professor of Government*
B.A., University of North Dakota, 1919; M.A., *ibid.*, 1920; LL.B.,
Yale University, 1922; Ph.D., Columbia University, 1931. (1922-)
- †ALLEN, FRED E., *Assistant Professor of Veterinary Science*
B.S., University of New Hampshire, 1932; D.V.M., Ohio State
University, 1936. (1940-)
- ANDERSON, CHARLOTTE K., *Documents Librarian*
B.A., University of Michigan, 1935; B.A. in L.S., *ibid.*, 1936.
(1943-)
- ANDERSON, ROBERT E., *Instructor in Electrical Engineering*
B.S., Newark College of Engineering, 1939. (1947-)
- ATKINSON, EDWARD R., *Associate Professor of Chemistry*
B.S., Massachusetts Institute of Technology, 1933; Ph.D., *ibid.*,
1936. (1938-)
- BABCOCK, DONALD C., *Professor of Philosophy*
B.A., University of Minnesota, 1907; M.A., *ibid.*, 1908; S.T.B.,
Boston University, 1912. (1918-)
- BACHELDER, JOSEPH E., JR., *Associate Professor of Sociology*
B.A., Westminster College, 1933; Ph.D., Yale University, 1937.
(1936-Resigned February 7, 1948)
- BAMBERG, KARL P., *Club Agent in Hillsborough County*
B.S., Iowa State College, 1944. (1946-)
- BARRACLOUGH, KENNETH E., *Extension Assistant Professor of Forestry*
B.S., New York State College of Forestry, Syracuse University,
1921; M.F., Harvard University, 1940. (1926-)
- BARTLEY, CLARA H., *Assistant Professor of Bacteriology*
B.S., Miami University, 1923; M.A., University of Michigan, 1926;
Ph.D., University of Kansas, 1935. (1945-)

THE UNIVERSITY FACULTY

- BARTLEY, IRVING D., *Assistant Professor of Music*
B.M., Syracuse University, 1933; M.M., *ibid.*, 1938. (1945-)
- BARTON, PHILIP S., *Associate Professor of Applied Farming*
B.S., University of New Hampshire, 1928; M.Ed., *ibid.*, 1938.
(1939-)
- BATCHELDER, WALTER E., *University Physician and Director of the Student Health Service*
B.S., University of New Hampshire, 1934; M.D., Boston University School of Medicine, 1939. (1946-)
- BATCHELLER, JOSEPH D., *Assistant Professor of Speech*
A.B., Carnegie Institute of Technology, 1936; A.M., University of Minnesota, 1938; Ph.D., *ibid.*, 1942. (1944-)
- BATES, JAMES C., *Colonel, Coast Artillery Corps, Professor of Military Science and Tactics*
- BEALL, DAVID C., *Major, Field Artillery, Assistant Professor of Military Science and Tactics*
B.S., Ohio State University, 1927; M.A., *ibid.*, 1937. (September 12, 1947-)
- BEANE, DORIS, *University Recorder*
A.B., Smith College, 1919; M.A., Teachers College, Columbia University, 1942. (1923-)
- BECKWITH, MARION C., *Director and Associate Professor of Physical Education for Women*
A.B., Oberlin College, 1935; M.Ed., University of New Hampshire, 1937. (1935-)
- BEECHER, MYRTIS E., *Home Demonstration Agent in Hillsborough County*
Graduate, Framingham Normal School, 1919; B.S., Framingham Teachers College, 1941. (1926-)
- BEGGS, ANN F., *Extension Assistant Professor of Home Economics*
B.S., Nasson College, 1947. (1917-)
- BELLO, EVA M., *Cataloguer*
B.A., Pembroke College, 1946; B.L.S., Syracuse University School of Library Science, 1947. (1947-)
- BENNETT, GEORGE, *Instructor in Business Administration*
A.B., Harvard College, 1938; LL.B., Boston University Law School, 1947. (1947-)
- BERG, HARRY D., *Assistant Professor of History*
B.A., Iowa State Teachers College, 1931; M.A., University of Iowa, 1936; Ph.D., *ibid.*, 1940. (1940-Resigned August 9, 1947)

UNIVERSITY OF NEW HAMPSHIRE

BERZUNZA, JULIO, *Assistant Professor of Languages*

B.A., University of Oklahoma, 1921; M.A., University of Illinois, 1923. (1928-)

BESSOM, MARGERY L., *Extension Assistant Professor of Home Economics*

B.S., Simmons College, 1932; M.A., Teachers College, Columbia University, 1943. (1943-)

BEVAN, LAURENCE A., *Associate Director of the General Extension Service*

B.S., Massachusetts Agricultural College, 1913. (1946-)

BINGHAM, SYLVESTER H., *Professor of English*

A.B., Dartmouth College, 1922; A.M., Harvard University, 1929; Ph.D., Yale University, 1937. (1936-)

BISSELL, LEWIS P., *County Forester in Grafton County*

B.S., University of New Hampshire, 1940; M.F., Yale School of Forestry, 1947. (January 1, 1948-)

BLACK, ROBERT D., *Superintendent of Properties*

S.B., Massachusetts Institute of Technology, 1922. (1947-Resigned December 13, 1947)

BLEWETT, EDWARD Y., *Dean of the College of Liberal Arts*

B.A., University of New Hampshire, 1926; M.A., Ohio State University, 1940. (1927-)

BLICKLE, MARGARET O., *Instructor in Music*

B.M., New England Conservatory of Music, 1943; M.Ed., University of New Hampshire, 1945. (1943-)

†BLICKLE, ROBERT L., *Assistant Professor of Entomology*

B.S., Ohio State University, 1937; M.S., University of New Hampshire, 1939; Ph.D., Ohio State University, 1942. (1938-41, 1946-)

BLOOD, EDWARD J., *Instructor in Physical Education and Athletics*

B.S., University of New Hampshire, 1935. (1936-)

BLOOD, PAUL T., *Research Assistant Professor of Agronomy*

B.S., New Hampshire College, 1921; M.S., University of New Hampshire, 1924. (1921-24, 1928-)

BOULAY, ERNEST A., *Instructor in Languages*

B.A., University of New Hampshire, 1933. (1946-)

BOURNE, ELIZABETH, *Club Agent in Rockingham County*

Diploma, Framingham Normal School, 1924. (1926-)

BOWEN, IRMA G., *Associate Professor of the Arts*

Graduate of Mechanics Institute, Rochester, New York, 1911; B.S., University of Rochester, 1925. (1920-Died August 25, 1947)

THE UNIVERSITY FACULTY

- BOWLER, EDMOND, W., *Professor of Civil Engineering*
S.B. in Sanitary Engineering, Massachusetts Institute of Technology,
1914. (1920-)
- BOWLES, ELLA S., *Publications Editor*
Plymouth Normal School, 1905. (1943-)
- BOYNTON, C. HILTON, *Extension Assistant Professor of Dairy Husbandry*
B.S., Iowa State College, 1934; M.S., *ibid.*, 1940. (1945-)
- BRACKETT, THELMA, *Librarian*
A.B., University of California, 1919; Certificate, California State Library, 1920. (1942-)
- BRADLEY, ROBERT F., *County Forester in Belknap-Strafford Area*
B.S., University of New Hampshire, 1939. (1944-)
- BRATTON, KARL H., *Associate Professor of Music*
B.M., University of Kansas; M.A., Teachers College, Columbia University, 1945. (1945-)
- BRECK, DONALD W., *Instructor in Chemistry*
B.S., University of New Hampshire, 1942. (1946-)
- BRECK, ROBERT W., *County Forester in Hillsborough County*
B.S., University of New Hampshire, 1940; M.F., Yale School of Forestry, 1941. (August 15, 1947-)
- BREDO, D. GENEVIEVE, *Instructor in the Arts*
A.B., San Diego (Calif.) State College, 1936; M.A., Teachers College, Columbia University, 1942. (1947-)
- †BREDO, WILLIAM, *Assistant Professor of Agricultural Economics*
B.A., University of Alberta, 1942; M.S., Iowa State College, 1943.
(1946-Resigned December 31, 1947)
- BREON, THEODORE F., *County Forester in Carroll County*
B.S., Pennsylvania State College, 1929. (1942-)
- BRETT, WESLEY F., *Instructor in the Arts*
B.Ed., Keene Teachers College, 1937. (1942-)
- BROWNE, EVELYN, *Assistant Professor of Physical Education for Women*
A.B., University of California, 1943; M.A., Teachers College, Columbia University, 1943. (1943-)
- CALAHAN, C. LYMAN, *Research Instructor in Horticulture*
B.S., Kansas State College, 1937. (1940-Resigned November 26, 1947)

UNIVERSITY OF NEW HAMPSHIRE

CALCUTT, ALFRED W., *Instructor in Physics*

B.S., University of New Hampshire, 1926. (1947-)

CAMPBELL, WILLIS C., *Research Assistant, Engineering Experiment Station*

B.S., New Hampshire College, 1906. (1943-)

CARLISLE, DUANE F., *Assistant Professor of Physics*

B.S., University of New Hampshire, 1934; M.A., Wesleyan University, 1936. (1943-)

CARROLL, HERBERT A., *Professor of Psychology*

A.B., Bates College, 1923; A.M., Brown University, 1928; Ph.D., Columbia University, 1930. (1941-)

CASTO, CAROL R., *Serials Cataloguer*

A.B., Emory and Henry College (Va.), 1940; B.S. in L.S., George Peabody College, 1941. (1947-)

CHANDLER, ROBERT F., JR., *Dean of the College of Agriculture and Director of the Agricultural Experiment Station*

B.S., University of Maine, 1929; Ph.D., University of Maryland, 1934. (September 1, 1947-)

CHAPMAN, DONALD H., *Associate Professor of Geology*

B.A., University of Michigan, 1927; M.A., *ibid.*, 1928; Ph.D., *ibid.*, 1931. (1931-)

†CHARLES, T. BURR, *Professor of Poultry Husbandry*

B.S., Cornell University, 1915; M.S., *ibid.*, 1938. (1928-)

CHASE, JEREMIAH A., *Director of Placement*

B.S., University of New Hampshire, 1936; M.Ed., *ibid.*, 1946. (1946-)

CLARK, DAVID G., *Assistant Professor of Physics*

B.A., Park College, 1938; M.S., Texas A. & M. College, 1940; Ph.D., Pennsylvania State College, 1947. (1947-)

CLARK, HARRIET L., *Home Demonstration Agent in Belknap County*

B.S., State Teachers College, Framingham, Massachusetts, 1942. (1946-)

CLARK, RUSSELL L., *Instructor in Chemistry*

B.S., University of Vermont, 1942. (1946-)

CLARK, WILLIAM E., *Instructor in Mechanical Engineering, Machine Shop*

B.S., University of New Hampshire, 1931. (1946-)

CLEMENT, WILLIAM D., *Instructor in Mechanical Engineering*

B.S., University of New Hampshire, 1942. (1946-)

THE UNIVERSITY FACULTY

COLBY, HALSTEAD N., *Extension Assistant Professor of Agricultural Engineering*

B.S., University of New Hampshire, 1930. (1946-)

COLBY, STANLEY W., *Agricultural Agent in Sullivan County*

B.S., University of New Hampshire, 1934. (1940-)

COLOVOS, NICHOLAS F., *Research Assistant Professor of Dairy Husbandry*

B.S., University of New Hampshire, 1927; M.S., *ibid.*, 1931. (1928-On leave)

†CONKLIN, JAMES G., *Professor of Entomology*

B.S., Connecticut Agricultural College, 1926; M.S., University of New Hampshire, 1929; Ph.D., Ohio State University, 1941. (1931-)

†CORBETT, ALAN C., *Assistant Professor of Poultry Husbandry*

B.S., University of Maine, 1936; M.S., *ibid.*, 1937; D.V.M., Michigan State College, 1940. (1941-)

CORTEZ, EDMUND A., *Associate Professor of Speech*

B.A., Taylor University, 1923; B.O., Asbury College, 1924; B.D., Asbury Theological Seminary, 1924; M.A., Columbia University, 1926; Ed.M., Harvard University, 1927. (1927-)

COULTER, CHARLES W., *Professor of Sociology*

B.A., University of Toronto, 1908; B.D., Victoria College, 1909; M.A., Yale University, 1910; Ph.D., *ibid.*, 1914. (1934-)

CROSSLAND, MARJORIE J., *Instructor in Home Economics*

B.S., University of Illinois, 1942; M.S., *ibid.*, 1947. (1947-)

CUMMINGS, MARY M., *Instructor in Zoölogy*

B.S., University of New Hampshire, 1946. (September 16, 1947-Resigned February 7, 1948)

CURTIS, HUNTINGTON W., *Instructor in Electrical Engineering*

B.S., College of William and Mary, 1942. (1947-)

DAGGETT, ALBERT F., *Professor of Chemistry*

B.S., University of New Hampshire, 1928; M.S., *ibid.*, 1930; Ph.D., Columbia University, 1934. (1928-31, 1935-)

DAGGETT, G. HARRIS, *Assistant Professor of English*

A.B., Cornell University, 1928; M.A., *ibid.*, 1929; Ph.D., University of North Carolina, 1941. (1942-)

DAHL, DONALD D., *Assistant Editor for Agricultural Extension*

B.A., University of North Dakota, 1941. (1946-)

DAHLFRED, VINCENT R., *Assistant in Information*

A.B., Dartmouth College, 1938. (1947-)

UNIVERSITY OF NEW HAMPSHIRE

- DAVIS, HENRY A., *Research Assistant Professor of Agricultural and Biological Chemistry*
B.S., University of New Hampshire, 1932; M.S., *ibid.*, 1934. (1932-)
- DAVIS, JOHN BRADFORD, JR., *Assistant to the President*
B.A., University of New Hampshire, 1944. (1945-Resigned August 31, 1947)
- DAVIS, MARION S., *Home Demonstration Agent in Sullivan County*
B.E., Keene Normal School, 1929. (1937-)
- DAVIS, MYRA L., *Instructor in Secretarial Studies*
B.S., Central Missouri State Teachers College, 1939; M.A., State University of Iowa, 1945. (1945-)
- DAWSON, CHARLES O., *Associate Professor of Civil Engineering*
B.C.E., Ohio State University, 1930; M.S., *ibid.*, 1940. (1930-)
- DEGLER, CARROLL M., *Associate Professor of Economics*
A.B., University of Kansas, 1925; M.B.A., New York University, 1927. (1928-)
- DEVINE, WALTON E., *Assistant Treasurer*
Bentley School of Accounting and Finance, 1940. (1947-)
- DINSMOOR, DANIEL S., *Visiting Lecturer in Chemistry*
B.S., Dartmouth College, 1916; A.M., Harvard University, 1917. (September 1, 1947-Resigned January 31, 1948)
- DITTMER, DANIEL G., *Instructor in Psychology*
B.A., University of Wisconsin, 1936; M.A., University of California, 1937; Ph.D., University of Wisconsin, 1940. (1946-)
- DOBROVOLNY, CHARLES G., *Associate Professor of Zoölogy*
B.A., University of Montana, 1928; M.S., Kansas State College of Agriculture and Applied Science, 1933; Ph.D., University of Michigan, 1938. (1940-Resigned February 7, 1948)
- DONOVAN, EDWARD T., *Associate Professor of Mechanical Engineering*
B.S., University of Wisconsin, 1921. (1926-)
- *†DOUGHERTY, LAWRENCE A., *Assistant Professor of Agricultural Economics*
B.S., Purdue University, 1921. (1930-)
- DOUGLASS, PHYLLIS, *Periodicals Librarian*
A.B., Berea College, 1931; B.S., Peabody College for Teachers, 1946. (1946-)
- DUNN, DONALD E., *Assistant Professor of Government, and Executive Secretary, Bureau of Government Research*
B.S., University of Pennsylvania, 1929; M.B.A., *ibid.*, 1939. (1946-)

THE UNIVERSITY FACULTY

- †DUNN, STUART, *Associate Professor of Botany*
B.S., University of Minnesota, 1923; M.S., Iowa State College, 1925; Ph.D., University of Minnesota, 1931. (1926-)
- DUNNING, SALLY J., *Instructor in Physical Education for Women*
B.S., Bouve-Boston School of Physical Education, 1946. (1946-)
- DUSSAULT, WILLIAM E., *County Forester in Cheshire-Sullivan Area*
B.S., University of New Hampshire, 1937. (1945-)
- EASTMAN, M. GALE, *Dean of the College of Agriculture and Director of the Agricultural Experiment Station*
B.S., New Hampshire College, 1913; M.S., Cornell University, 1916, Ph.D., *ibid.*, 1931. (1918-Resigned September 30, 1947)
- ELLIS, ELIZABETH E., *Extension Assistant Professor of Home Economics*
B.S., Teachers College, Columbia University, 1927; M.A., *ibid.*, 1929. (1929-)
- ELLIS, FREDERICK E., *Instructor in Education*
A.B., Reed College, 1938; A.B., Western Washington College of Education, 1942; Ed.M., Harvard University, 1944. Ed.D., *ibid.*, 1948. (1947-)
- ENGLISH, LENA M., *Assistant Director of Student Health Service*
M.D., Woman's Medical College of Pennsylvania, 1924. (1947-)
- FENTON, AUSTEN W., *Agricultural Agent in Carroll County*
B.A., University of New Hampshire, 1932. (1942-)
- †FEUER, REESHON, *Assistant Professor of Agronomy*
B.S., University of New Hampshire, 1943. (1947-)
- FOGG, HEMAN C., *Demonstrator, Chemistry Department*
B.S., New Hampshire College, 1918; M.S., *ibid.*, 1920; Ph.D., University of Michigan, 1933. (1918-38, 1943-)
- FOSTER, ALICE P., *Instructor in Home Economics*
A.B., University of New Hampshire, 1928; M.Ed., *ibid.*, 1940. (1947-)
- FOSTER, EUGENE L., *Instructor in Mechanical Engineering*
B.S., University of New Hampshire, 1944. (1947-)
- †FOULKROD, GEORGE M., *Associate Professor of Agricultural Engineering*
B.S., Pennsylvania State College, 1919; B.S. in Agricultural Engineering, *ibid.*, 1931; M.S. in Agricultural Education, *ibid.*, 1931. (1933-)

UNIVERSITY OF NEW HAMPSHIRE

FRENCH, JOHN S., *Special Lecturer in Mathematics with rank of Assistant Professor*

A.B., Bowdoin College, 1895; Ph.D., Clark University, 1898. (1943-44, 1945-)

FUNKHOUSER, JAMES A., *Associate Professor of Chemistry*

B.S., Carnegie Institute of Technology, 1925; Ph.D., Ohio State University, 1930. (1930-)

GETCHELL, EDWARD L., *Professor of Mechanical Engineering*

B.S., University of Maine, 1914; E.E., *ibid.*, 1920. (1917-)

GETTY, F. VERNON, *Instructor in English*

B.A., University of Maryland, 1942; M.A., *ibid.*, 1945. (1946-)

GIDDINGS, HORACE A., *Associate Professor of Mathematics*

B.S., University of New Hampshire, 1923; Ph.D., Massachusetts Institute of Technology, 1934. (1923-24, 1942-)

GILBERT, HUNTINGTON K., *Lieutenant Colonel, Air Corps, Associate Professor of Military Science and Tactics*

B.A., Williams College, 1937. (1946-)

GILES, PAUL T., *Instructor in Music*

New England Conservatory of Music; Curtis Institute of Music. (1947-)

GILMAN, PAUL A., *Instructor in Applied Farming*

B.S., University of Vermont, 1938. (1945-)

GLASSFORD, JAMES W., *Instructor in Physical Education and Head Football Coach*

B.S., University of Pittsburgh, 1937. (1946-)

GOFFE, LEWIS C., *Instructor in English*

B.S., University of New Hampshire, 1935; M.A., *ibid.*, 1946. (1946-)

GOODWIN, JEANETTE L., *Instructor in Physical Education for Women*

B.S., Boston University, Sargent College of Physical Education, 1944. (1946-)

GOTAAS, MARY C., *Instructor in Languages*

B.S., Northern State Teachers College, South Dakota, 1928; M.A., University of Minnesota, 1930. (1947-)

GOULD, GILBERT B., *Instructor in Electrical Engineering*

B.S., Massachusetts Institute of Technology, 1943. (1946-)

GRANGER, RALPH H., *Assistant Professor of Applied Farming*

B.S., Massachusetts State College, 1935; M.S., *ibid.*, 1939. (1946-)

THE UNIVERSITY FACULTY

- GRIGAUT, PAUL L., *Associate Professor of Languages*
B. es L., 1926; Certifié de Licence (Sorbonne); Diplôme de l'Ecole du Louvre, 1932. (1927-Resigned August 30, 1947)
- GRILLY, EDWARD D., *Assistant Professor of Chemistry*
B.A., Ohio State University, 1940; Ph.D., *ibid.*, 1944. (1946-Resigned September 20, 1947)
- GRINNELL, HAROLD C., *Professor of Agricultural Economics, Associate Dean, College of Agriculture, and Associate Director, Agricultural Experiment Station*
B.S., Cornell University, 1921; M.S., *ibid.*, 1930; Ph.D., *ibid.*, 1941. (1932-)
- GROB, FRIEDRICH W., *Instructor in Languages*
Dr.jur.utr., University of Bern, 1927; S.J.D., Harvard Law School, 1935. (1947-)
- HAENDLER, HELMUT M., *Assistant Professor of Chemistry*
B.S., Northeastern University, 1935; Ph.D., University of Washington, 1940. (1945-)
- HALL, HARRY H., *Associate Professor of Physics*
B.S., Union College, 1926; Ph.D., Harvard University, 1934. (1940-)
- HARRIS, ARTHUR S., *Instructor in English*
S.B., Harvard College, 1942. (1947-)
- HARTWELL, WILLIAM H., *Associate Professor of Physics*
B.S., Boston University, 1924; M.A., Wesleyan University, 1927. (1929-)
- HARVEY, A. RAYMOND, *Assistant Professor of Mathematics*
B.S., Bates College, 1942; A.M., Harvard University, 1946. (1946-)
- HASKELL, CHARLES B., *Instructor in Physics*
A.B., Bowdoin College, 1913. (1944, 1946-)
- HASLERUD, GEORGE M., *Associate Professor of Psychology*
B.A., University of Minnesota, 1930; Ph.D., *ibid.*, 1934. (1945-)
- HÄUSLEIN, JOHN D., *Assistant Professor of Business Administration*
B.A., Yale University, 1916; M.A., *ibid.*, 1920. (1926-)
- HENDERSON, RUTH S., *Home Demonstration Agent in Carroll County*
B.S., University of New Hampshire, 1938. (1939-Resigned November 30, 1947)
- HENNESSY, WILLIAM G., *Professor of English*
A.B., Boston University, 1916; A.M., *ibid.*, 1924. (1923-)

UNIVERSITY OF NEW HAMPSHIRE

*HEPLER, JESSE R., *Associate Professor of Horticulture*

B.S., Pennsylvania State College, 1911; M.S., University of Wisconsin, 1922. (1917-)

†HESS, CARL W., *Assistant Professor of Poultry Husbandry*

B.S., Iowa State College, 1938; M.S., University of Maryland, 1940; Ph.D., *ibid.*, 1947. (1941-42; 1947-)

†HIGGINS, LEROY J., *Associate Professor of Agronomy*

B.S., University of New Hampshire, 1923. (1927-28, 1929-)

HITCHCOCK, LEON W., *Professor of Electrical Engineering*

B.S., Worcester Polytechnic Institute, 1908. (1910-)

†HODGDON, ALBION R., *Associate Professor of Botany*

B.S., University of New Hampshire, 1930; M.S., *ibid.*, 1932; Ph.D., Harvard University, 1936. (1930-32, 1936-)

HOGAN, JOHN A., *Associate Professor of Economics*

A.B., University of Washington, 1932; A.M., *ibid.*, 1934; M.A., Harvard University, 1948. (1947-)

HOITT, SAMUEL W., *Assistant Director of the General Extension Service*

B.S., University of New Hampshire, 1930; M.S., *ibid.*, 1931. (1929-)

HOLDEN, EDWARD W., *Agricultural Agent in Merrimack County*

B.S., University of Maine, 1923. (1923-)

HOLDEN, JOHN T., *Associate Professor of Government*

A.B., Wesleyan University, 1936; M.A., Harvard Graduate School of Arts and Sciences, 1941; Ph.D., *ibid.*, 1943. (1947-)

HOLMES, JOHN C., *Research Assistant in Agricultural Economics*

A.B., Dartmouth College, 1913; S.B. in Mech. Engr., Massachusetts Institute of Technology, 1915. (1939-)

HOLTON, DEXTER S., *Research Assistant, Engineering Experiment Station*

B.S., University of New Hampshire, 1943. (1947-)

HOWES, HORACE L., *Professor of Physics*

B.S., Syracuse University, 1905; Ph.D., Cornell University, 1915. (1918-)

HUBBARD, E. WELLS, *Instructor in Physics*

A.B., Oberlin College, 1938; M.A., Boston University, 1943. (1946-)

HUDDLESTON, ERIC T., *Professor of Architecture, Supervising Architect*

B.Arch., Cornell University, 1910.. (1914-)

THE UNIVERSITY FACULTY

- IDDLES, HAROLD A., *Professor of Chemistry*
B.S., Michigan State College, 1918; M.S., University of Iowa, 1921;
Ph.D., Columbia University, 1925. (1929-)
- JACKSON, C. FLOYD, *Professor of Zoölogy*
B.A., DePauw University, 1905; M.S., Ohio State University, 1907.
(1908-)
- JACKSON, ELLEN E., *Home Demonstration Agent in Coös County*
B.S., Keene Teachers College, 1941. (1945-)
- JACKSON, ERMA A., *Instructor in Zoölogy*
B.A., University of New Hampshire, 1926; M.S., *ibid.*, 1941.
(1938-)
- JACKSON, THOMAS A., *Instructor in Business Administration*
B.S., University of Connecticut, 1946. (1947-)
- JOHNSON, ARTHUR W., *Professor of Business Administration*
B.B.A., College of Business Administration, Boston University;
M.B.A., *ibid.*, 1929; C.P.A. (1920-)
- JOHNSON, GIBSON R., *Assistant Professor of History*
A.B., Muskingum College, 1916; M.A., Princeton University, 1920;
Ph.D., University of Edinburgh, 1922. (1932-)
- JOHNSON, HOWARD P., *Associate Professor of History*
A.B., Yale College, 1931; Ph.D., Yale Graduate School, 1937.
(1947-)
- JOHNSON, WILLIAM A., *County Forester in Grafton County*
B.S., University of New Hampshire, 1941. (1941-44, 1946-Resigned
December 31, 1947)
- JONES, RICHARD C., *Assistant Professor of Botany*
A.B., Dartmouth College, 1938; M.S., University of New Hampshire,
1943; Ph.D., State College of Washington, 1944. (1944-)
- JOSKO, WILLIAM J., *Instructor in Business Administration*
B.S., American International College, 1941. (1946-)
- JUDKINS, BEATRICE A., *Home Demonstration Agent in Merrimack
County*
B.S., Keene Teachers College, 1937. (1945-)
- KARDOS, LOUIS T., *Research Assistant Professor of Agronomy*
B.S., Rutgers University, 1932; M.S., *ibid.*, 1934; Ph.D., *ibid.*, 1937.
(1943-)
- KAUPPINEN, TENHO S., *Assistant Professor of Mechanical Engineering*
B.S., University of New Hampshire, 1939. (1939-)

UNIVERSITY OF NEW HAMPSHIRE

- †KEENER, HARRY A., *Associate Professor of Dairy Husbandry*
B.S., Pennsylvania State College, 1936; M.S., West Virginia University, 1938; Ph.D., Pennsylvania State College, 1941. (1941-)
- KELLY, RUTH B., *Instructor in Psychology and Counselor*
A.B., Radcliffe College, 1933; M.A., University of New Hampshire, 1946. (1942-)
- KENNEDY, ROBERT C., *Instructor in Applied Farming*
B.V.A., Massachusetts State College, 1940. (1941-)
- KERR, SARA, *State Home Demonstration Leader*
B.S., Teachers College, Columbia University, 1921; M.A., *ibid.*, 1928. (1944-)
- KICHLINE, WILLIAM L., *Assistant Professor of Mathematics*
B.A., Lehigh University, 1924; M.S., *ibid.*, 1928. (1931-)
- KIMBALL, EDWIN I., *Instructor in Mechanical Engineering, Forge and Welding Shop*
(1946-)
- KIMBALL, ROBERT O., *Instructor in Mathematics*
B.S., University of New Hampshire, 1941. (1946-)
- KOCH, WAYNE S., *Assistant Professor of Education*
B.S., Muhlenberg College, 1941; Ed.M., Harvard University, 1945. (1945-)
- LADD, GARDNER, *Instructor in Mechanical Engineering*
B.S., Rhode Island State College, 1938; M.S., University of New Hampshire, 1939. (1946-)
- †LATIMER, L. PHELPS, *Assistant Professor of Horticulture*
B.S., University of California, 1921; M.S., *ibid.*, 1922; Ph.D., *ibid.*, 1926. (1926-)
- LEAVENGOOD, LEO D., *Captain, Infantry, Assistant Professor of Military Science and Tactics*
B.A., Central College, Pella, Iowa, 1939. (1946-)
- LEAVITT, HAROLD I., *Superintendent of Properties*
B.S., New Hampshire College, 1921; M.Ed., University of New Hampshire, 1936; M.A., Columbia University, 1940. (1928-)
- LITTLEFIELD, RALPH B., *Extension Assistant Professor of Agronomy*
B.S., University of New Hampshire, 1927. (1940-)
- LUNDHOLM, CARL, *Director and Professor of Physical Education and Athletics*
B.S., New Hampshire College, 1921; M.A., Columbia University, 1939. (1928-)

THE UNIVERSITY FACULTY

- MACE, JAMES C., *Associate Professor of Electrical Engineering*
Ph.B., Ripon College, 1929; M.S., University of Illinois, 1934; Ph.D.,
ibid., 1940. (1946-)
- MAGRATH, RAYMOND C., *Treasurer*
Burdett College, 1916. (1923-)
- MAJCHRZAK, ELAINE R., *Instructor in Music*
B.S., Eastman School of Music, University of Rochester, 1946.
(1946-)
- MANN, GUY W., *Club Agent in Strafford County*
B.S., University of New Hampshire, 1933. (1946-)
- MANTON, ROBERT W., *Professor of Music*
Harvard University, 1918. (1923-)
- MARCOTTE, FRANK B., *Instructor in Chemistry*
B.S., University of New Hampshire, 1946. (1947-)
- MARSHALL, THOMAS O., JR., *Professor of Education*
A.B., Colgate University, 1929; Ed.M., University of Buffalo, 1933;
Ed.D., Harvard University, 1936. (1947-)
- MARSTON, PHILIP M., *Associate Professor of History*
B.A., University of New Hampshire, 1924; M.A., *ibid.*, 1927.
(1924-)
- MATTHEWS, CHARLES M., *Instructor in Forestry*
B.S., North Carolina State College, 1937. (1946-)
- MAYNARD, MAX S., *Instructor in English*
B.A., University of British Columbia, 1937. (1946-)
- MCCURRY, MAUDE, *Reference Librarian*
A.B., University of Georgia, 1942; A.B. in L.S., Emory University,
1947. (September 8, 1947-)
- MCINTIRE, PAUL H., JR., *Instructor in Psychology and Counselor*
B.A., University of New Hampshire, 1942; A.M., Boston University,
1945. (1946-)
- MCINTYRE, WALLACE E., *Instructor in Geography*
B.Ed., Illinois State Normal University, 1940; A.M., Clark Uni-
versity, 1947. (1947-)
- MCLAUGHLIN, CHARLES L., *Instructor in Forestry*
B.S., Massachusetts State College, 1940; M.S., *ibid.*, 1942. (1947-)
- MCLAUGHLIN, HELEN F., *Professor of Home Economics*
B.A., University of Wisconsin, 1909; B.S., Simmons College, 1915;
M.A., Teachers College, Columbia University, 1925. (1917-)

UNIVERSITY OF NEW HAMPSHIRE

MCNERNEY, CHARLES T., JR., *Loan Librarian*

B.A., Niagara University, 1941; B.S. in L.S., Syracuse University School of Library Science, 1947. (August 7, 1947-)

MEDESY, WILLIAM A., *Dean of Men*

B.S., Purdue University, 1931; M.F., Yale University, 1933. (1940-)

MEYERS, THEODORE R., *Associate Professor of Geology*

B.A., Ohio State University, 1926; M.A., *ibid.*, 1929. (1927-)

MILLS, MARIAN E., *Assistant Professor of Botany*

B.S., Teachers College, Columbia University, 1917; M.A., *ibid.*, 1920. (1927-)

MITCHELL, JOHN S., *Instructor in Music*

A.A.O.G. (1946-)

MOORE, GEORGE M., *Associate Professor of Zoölogy*

A.Sc., University of the City of Toledo, 1926; B.S., Otterbein College, 1928; M.S., University of Michigan, 1932; Ph.D., *ibid.*, 1938. (1944-)

†MOORE, HERBERT C., *Associate Professor of Dairy Husbandry*

B.S., Purdue University, 1923; M.S., University of Minnesota, 1925. (1928-)

†MORROW, KENNETH S., *Professor of Dairy Husbandry*

B.S., University of Minnesota, 1918; M.S., *ibid.*, 1925. (1934-)

MORSE, WALLACE J., *Research Assistant in Entomology*

B.S., University of New Hampshire, 1943. (1943-)

MOSS, HERBERT J., *Assistant Professor of Sociology*

A.B., Wesleyan University, 1931; A.M., Harvard University, 1932; Ph.D., *ibid.*, 1938. (1946-)

MOULTON, VERNA E., *Assistant Professor of Home Economics*

B.S., University of New Hampshire, 1938; M.Ed., *ibid.*, 1940; M.A., Teachers College, Columbia University, 1945. (1938-)

NASON, HARRIETT B., *Supervising Nurse*

R.N., Wentworth Hospital, Dover, N. H., 1935. (1942-)

NEEFUS, WENDOVER, JR., *Instructor in the Arts and University Photographer*

A.B., Dartmouth College, 1942. (1946-)

NICKOLLS, JANE A., *Assistant Club Agent in Hillsborough County*

B.S., Cornell University, 1947. (1947-)

THE UNIVERSITY FACULTY

- NULSEN, WILLIAM B., *Associate Professor in Electrical Engineering*
B.S., California Institute of Technology, 1918; M.S., University of
New Hampshire, 1930. (1926-)
- O'BRIEN, DANIEL A., *Agricultural Agent in Coös County*
Cornell University, 1913. (1920-)
- O'CONNELL, ELIAS M., *Instructor in Mechanical Engineering, Forge
and Welding Shop*
Graduate, Wentworth Institute, course in forging, hardening and
tempering, 1923; Graduate, two-year course in pattern making,
ibid., 1925. (1926-)
- *OLNEY, AUSTIN L., *Assistant Professor of Education*
B.S., Central Michigan College of Education, 1937; M.Ed., Uni-
versity of Vermont, 1946. (1946-)
- OLSSON, GUNNAR B., *Extension Assistant in Dairying*
B.A., New Hampshire College, 1922. (1944-)
- ONGLEY, PHYLLIS, *Instructor in Physical Education for Women*
B.S., Sargent College of Physical Education, Boston University,
1944. (1944-)
- OWEN, MARGARET, *Order Librarian*
B.A., Mount Holyoke College, 1919. (1943-)
- PALMER, LEWIS H., *Instructor in English*
A.B., Amherst College, 1937. (1947-)
- PARKER, CLIFFORD S., *Professor of Languages*
A.B., Harvard University, 1912; A.M., *ibid.*, 1914; Ph.D., Columbia
University, 1925. (1931-)
- PARTRIDGE, ALLAN B., *Assistant Professor of History*
A.B., Clark University, 1922; A.M., *ibid.*, 1923. (1925-)
- PATTON, WILLARD G., *Club Agent in Cheshire County*
B.S., Massachusetts State College, 1939. (1945-)
- PERCIVAL, GORDON P., *Research Assistant Professor of Agricultural
and Biological Chemistry*
B.S., Massachusetts Agricultural College, 1924; M.S., *ibid.*, 1926.
(1926-)
- PERKINS, DONALD M., *Assistant Professor of Mathematics*
B.S., University of New Hampshire, 1931; M.S., *ibid.*, 1933.
(1931-)
- PERKINS, VINCENT A., *Club Agent in Sullivan County*
B.S., University of New Hampshire, 1916. (1946-)

UNIVERSITY OF NEW HAMPSHIRE

PETROSKI, JOSEPH J., *Instructor in Physical Education and Athletics*
B.A., University of New Hampshire, 1947. (1947-)

†PHILLIPS, THOMAS G., *Professor of Agricultural and Biological Chemistry*
B.S., Ohio State University, 1912; M.S., *ibid.*, 1913; Ph.D., University of Chicago, 1918. (1925-)

PHIPPS, ROBERT H. K., *County Forester in Coös County*
B.S., University of New Hampshire, 1931. (1942-)

PIERCE, EVERETT W., *Agricultural Agent in Hillsborough County*
B.S., Cornell University, 1923. (1923-)

PLATTS, FRANCES E., *Instructor in Home Economics*
B.S., University of New Hampshire, 1933; M.Ed., *ibid.*, 1941.
(1945-)

PRESBY, HAROLD F., *Instructor in Agriculture*
B.S., University of New Hampshire, 1931. (December 1, 1947-)

PRESCOTT, J. ROBERT, *Research Assistant in Dairy Husbandry*
B.S., University of New Hampshire, 1943. (September 1, 1947-)

†PRINCE, FORD S., *Professor of Agronomy*
B.S., University of Illinois, 1913. (1925-)

PRINCE, WILLIAM L., *University Alumni Secretary*
B.A., University of New Hampshire, 1930. (1946-)

PURINGTON, JAMES A., *Agricultural Agent in Rockingham County*
B.S., New Hampshire College, 1916; M.S., Massachusetts Agricultural College, 1920. (1920-)

†PURINTON, HELEN J., *Assistant Professor of Agricultural and Biological Chemistry*
B.S., University of Miami, 1937; M.S., Pennsylvania State College, 1940; Ph.D., Purdue University, 1943. (1943-)

QUINNEY, BEVERLY B., *Laboratory Instructor in Chemistry*
B.S., University of New Hampshire, 1946. (1947-)

*RABETHGE, PRISCILLA, *Instructor in Physical Education for Women*
A.B., Boston University, 1939. (1944-)

*†RASMUSSEN, EDWIN J., *Associate Professor of Horticulture*
B.S., University of Wisconsin, 1927; M.S., *ibid.*, 1929. (1929-36, 1947-)

REED, MARGARET A., *Home Demonstration Agent in Cheshire County*
B.S., Drexel Institute of Technology, 1945. (1947-)

THE UNIVERSITY FACULTY

REYNOLDS, GEORGE E., *Instructor in Music*

B.S., Southwestern College, 1942; M.M., Cincinnati Conservatory of Music, 1946. (1946-)

RICE, UNA A., *Home Demonstration Agent in Grafton County*

B.S., Teachers College, Columbia University, 1927; A.M., *ibid.*, 1942. (1929-)

RICH, WAYNE S., *Club Agent in Merrimack County*

B.S., University of Maine, 1934. (1946-)

RICHARDS, DONALD H., *Counsellor, Bureau of Admissions and Counselling*

B.A., University of New Hampshire, 1943. (1947-)

†RICHARDS, MATHIAS C., *Associate Professor of Botany*

B.S., Utah State Agricultural College, 1932; Ph.D., Cornell University, 1938. (1941-)

RICHARDSON, EDYTHE T., *Associate Professor of Zoölogy*

B.S., New Hampshire College, 1922; M.S., University of New Hampshire, 1924. (1922-)

RICHARDSON, JOHN C., *Instructor in English*

A.B., Dartmouth College, 1941; M.A., Columbia University, 1942. (1946-)

RIDEOUT, JOHN G., *Assistant Professor of English*

B.A., Colby College, 1936; B.A., M.A., Oxford University, 1939; Ph.D., Brown University, 1942. (1946-)

†RINGROSE, RICHARD C., *Assistant Professor of Poultry Husbandry*

B.S., Cornell University, 1932; Ph.D., *ibid.*, 1936. (1942-)

†RISLEY, EDWARD B., *Instructor in Horticulture and Greenhouse Superintendent*

B.S., Massachusetts State College, 1946. (February 1, 1948-)

ROBINSON, FRANCIS E., *University Editor*

B.A., University of New Hampshire, 1931; M.A., *ibid.*, 1933. (1944-)

ROPER, ELIZABETH R., *Club Agent in Carroll County*

B.A., University of New Hampshire, 1928. (1928-)

SACKETT, EVERETT B., *Dean of Student Administration*

B.A., Hamline University, 1923; M.A., University of Minnesota, 1925; Ph.D., Columbia University, 1931. (1938-)

UNIVERSITY OF NEW HAMPSHIRE

- SCHAEFER, PAUL E., *Assistant Professor of Zoölogy and Assistant to the Dean, College of Liberal Arts*
A.B., Bethany College, 1926; M.S., Ohio State University, 1931;
Ph.D., *ibid.*, 1936. (1941-)
- SCHEIER, EDWIN, *Instructor in the Arts*
Art-Students League, 1928-30; New York School of Industrial
Art, 1929-31. (1940-)
- SCHNEIDER, CARL J., *Instructor in Government*
A.B., Oberlin College, 1939; Ph.D., University of Wisconsin, 1943.
(1946-)
- SCHOOLCRAFT, CORNELIA C., *Instructor in the Arts*
Graduate, Cooper Union, 1924. (1945-)
- SCHOOLCRAFT, JAMES T., *Assistant Professor of Languages*
B.S., Union College, 1923; Abgangs-Zeugnis, Heidelberg Univer-
sity, 1924; A.M., Columbia University, 1926. (1936-)
- SCHULTZ, JOHN H., *Assistant Professor of English*
B.A., University of Texas, 1933; M.A., *ibid.*, 1934; M.A., Harvard
University, 1939; Ph.D., *ibid.*, 1940. (1946-)
- SCOTT, BETTY-LOU, *Assistant Club Agent in Grafton County*
B.A., University of New Hampshire, 1947. (August 11, 1947-)
- SCOTT, FREDERIC A., *Professor of Physics*
B.S., New York State College for Teachers, 1924; M.S., Lehigh
University, 1929; Ph.D., Rice Institute, 1935. (1947-)
- SCUDDER, HAROLD H., *Professor of English*
B.S., Dartmouth College, 1903. (1913-)
- SEDGEWICK, CLAIRE C., *Laboratory Instructor in Chemistry*
B.S., Jackson College, 1945. (1947-)
- SEELEY, LAUREN E., *Dean of the College of Technology, Director of
the Engineering Experiment Station, and Professor of Mechanical
Engineering*
Ph.B., Yale University, 1921; M.E., *ibid.*, 1924; LL.B., *ibid.*, 1935.
(1945-)
- SEIBERLICH, JOSEPH, *Research Assistant Professor, Engineering Ex-
periment Station*
Diplom Ingenieur, Technical University, Karlsruhe, Germany,
1924; Doctor Ingenieur, *ibid.*, 1928. (1941-)
- SEWELL, CHARLES A., *Instructor in Mathematics*
B.S., University of New Hampshire, 1929; M.S., *ibid.*, 1932.
(1946-)

THE UNIVERSITY FACULTY

- SHAFER, JOSEPH E., *Professor of Economics*
B.S., DePauw University, 1925; M.A., University of Wisconsin, 1929; Ph.D., *ibid.*, 1932. (1946-)
- SHAKA, NAPOLEON A., *Captain, Air Force, Assistant Professor of Military Science and Tactics*
B.A., Norwich University, 1938. (July 25, 1947-)
- SHEEHY, CATHERINE M., *Instructor in Physical Education for Women*
B.S., Sargent College of Physical Education, Boston University, 1946. (1946-)
- †SHIMER, STANLEY R., *Associate Professor of Agricultural and Biological Chemistry*
B.S., Muhlenberg College, 1918; M.S., Pennsylvania State College, 1923. (1924-)
- SHORB, ELLIS, *Instructor in English*
B.S., Columbia University, 1947. (1947-)
- SIEGEL, CLIFFORD M., *Instructor in Electrical Engineering*
B.E.E., Marquette University, 1947. (1947-)
- SKELTON, RUSSELL R., *Professor of Civil Engineering*
B.S., in Civil Engineering, Purdue University, 1923; C.E., *ibid.*, 1934; S.M. in Engineering, Harvard University, 1939. (1928-)
- †SLANETZ, LAWRENCE W., *Associate Professor of Bacteriology*
B.S., Connecticut State College, 1929; Ph.D., Yale University, 1932. (1932-)
- SLOAN, ROGER P., *County Forester in Rockingham County*
B.S., University of New Hampshire, 1942. (1946-)
- SLOBIN, HERMON L., *Dean of the Graduate School and Professor of Mathematics*
A.B., Clark University, 1905; Ph.D., *ibid.*, 1908. (1919-)
- SMALL, RICHARD L., *Lecturer in Business Administration*
A.B., Harvard University, 1916. (September 1, 1947-February 7, 1948)
- SMITH, ROBERT S., *Agricultural Agent in Belknap County*
B.S., Cornell University, 1942. (1947-)
- SMITH, SHIRLEY J., *Home Demonstration Agent in Strafford County*
B.S., State Teachers College, Framingham, Mass., 1939; M.S., Cornell University, 1944. (1945-)
- SMITH, TODD O., *Research Assistant Professor of Agricultural and Biological Chemistry*
A.B., Indiana University, 1910; M.S., New Hampshire College, 1917. (1910-)

UNIVERSITY OF NEW HAMPSHIRE

- *†SMITH, WILLIAM W., *Assistant Professor of Horticulture*
B.S., University of New Hampshire, 1924; M.S., *ibid.*, 1929; Ph.D.,
Michigan State College, 1935. (1936-)
- SOLT, MARVIN R., *Associate Professor of Mathematics*
B.S., Lehigh University, 1918; M.S., *ibid.*, 1925. (1926-)
- SOMERS, RICHARD H., *Special Lecturer in Mathematics with rank of
Assistant Professor*
B.S., U. S. Military Academy, 1907; M.B.A., Harvard Graduate
School of Business Administration, 1928. (1946-)
- STANCZYK, EDWARD M., *Instructor in Physical Education and Athletics*
B.S., New College of Teachers, Columbia University, 1937; M.A.,
ibid., 1939. (1946-)
- STARKE, RAYMOND R., *Professor of Hotel Administration*
A.B., Boston University, 1921; A.M., Harvard University, 1926.
(1921-24, 1926-)
- STEBBINS, WINIFRED C., *Laboratory Instructor in Chemistry*
B.S., University of New Hampshire, 1943. (1947-)
- STEELE, DONALD E., *Instructor in Music*
B.M., New England Conservatory of Music, 1946. (1946-)
- †STEVENS, CLARK L., *Professor of Forestry*
B.S., New Hampshire College, 1917; M.F., Yale University, 1926;
Ph.D., *ibid.*, 1930. (1919-)
- STEVENS, HENRY B., *Director of the General Extension Service*
A.B., Dartmouth College, 1912. (1918-)
- STEWART, GLENN W., *Assistant Professor of Geology*
B.S., University of New Hampshire, 1935; M.S., Syracuse Univer-
sity, 1937. (1938-39, 1941-)
- STIMSON, RUTH G., *Home Demonstration Agent in Rockingham
County*
B.S., University of New Hampshire, 1940; M.Ed., *ibid.*, 1944.
(1942-)
- STOLLER, CONSTANCE L., *Laboratory Instructor in Chemistry*
B.A., Hunter College, 1944. (1947-)
- STOLLER, LEO, *Instructor in English*
B.S., College of the City of New York, 1942; A.M., Columbia
University, 1947. (1947-)
- STOLWORTHY, E. HOWARD, *Associate Professor of Mechanical Engi-
neering*
B.S., Tufts College, 1922. (1922-)

THE UNIVERSITY FACULTY

- STOWE, A. MONROE, *Professor of Education*
Ph.B., Northwestern University, 1903; A.M., *ibid.*, 1904; A.M., Harvard University, 1905; Ph.D., Columbia University, 1909. (1934-)
- STUART, DAVID G., *Instructor in Civil Engineering*
B.S., University of New Hampshire, 1947. (1947-)
- STUBBE, JOHN S., *Assistant Professor of Mathematics*
B.S., University of New Hampshire, 1941; M.S., Brown University, 1942; Ph.D., University of Cincinnati, 1945. (1947-)
- SULLIVAN, JAMES A., *Major, Coast Artillery Corps, Assistant Professor of Military Science and Tactics*
B.S., University of New Hampshire, 1932. (1946-August 15, 1947; October 15, 1947-)
- †SWAIN, LEWIS C., *Associate Professor of Forestry*
B.S., New Hampshire College, 1918; M.F., Harvard University, 1939. (1927-)
- SWASEY, HENRY C., *Associate Professor of Physical Education and Athletics*
B.S., Amherst College, 1915; M.S., Indiana University, 1941. (1921-)
- SWEET, PAUL C., *Associate Professor of Physical Education and Athletics*
B.S., University of Illinois, 1923; M.A., University of Southern California, 1941. (1924-)
- †TEERI, ARTHUR E., *Assistant Professor of Agricultural and Biological Chemistry*
B.S., University of New Hampshire, 1937; M.S., *ibid.*, 1940; Ph.D., Rutgers University, 1943. (1938-40, 1943-)
- THIBAUT, HECTOR H., *Assistant to the Director of Student Health*
A.B., Assumption College, 1941; M.D., Georgetown University School of Medicine, 1944. (January 1, 1948-)
- THOMAS, GEORGE R., *Associate Professor of the Arts*
B.Arch., Carnegie Institute of Technology, 1930. (1930-)
- THOMAS, MILDRED E., *Assistant in the Department of the Arts*
B.A., University of New Hampshire, 1947. (1947-)
- THOMPSON, WILBUR E., *County Forester in Merrimack-Hillsborough Area*
B.S., University of New Hampshire, 1927. (1945-)
- TIRRELL, LORING V., *Professor of Animal Husbandry*
B.S., Massachusetts Agricultural College, 1920; M.S., Massachusetts State College, 1941. (1921-25, 1930-)

UNIVERSITY OF NEW HAMPSHIRE

- TONKIN, JOHN C., *Instructor in Mechanical Engineering, Machine Shop*
(1910-12, 1924-)
- TORGESSEN, JOHN L., *Assistant Professor of Chemistry*
B.S., University of Idaho, 1935; M.S., *ibid.*, 1937; Ph.D., Columbia
University, 1942. (1941-)
- TOWLE, CARROLL S., *Professor of English*
A.B., Bowdoin College, 1922; Ph.D., Yale University, 1933.
(1931-)
- TOWNSEND, PAUL A., *Instructor in Civil Engineering*
B.S., University of New Hampshire, 1941. (1946-)
- TRAVER, PAUL C., *Instructor in Agriculture*
B.S., University of New Hampshire, 1932. (1941-42, 1946-)
- TUXBURY, FRANCIS V., *Acting Club Agent in Grafton County*
Albany Business College, 1908-09. (1944-)
- TYRRELL, DORIS E., *Associate Professor of Secretarial Studies*
B.S., University of Minnesota, 1926; M.A., *ibid.*, 1932. (1938-)
- UNDERWOOD, RUSSELL E., *Extension Assistant Economist in Marketing*
B.S., Pennsylvania State College, 1918. (January 1, 1948-)
- VARNEY, BEATRICE S., *Laboratory Instructor in Physics*
B.S., University of New Hampshire, 1944. (1946-Resigned August
31, 1947)
- VEYETTE, JOHN J., JR., *Major, Air Corps, Assistant Professor of Military
Science and Tactics*
B.S., Norwich University, 1939. (1946-)
- WADLEIGH, CLARENCE B., *State Club Leader, Extension Service*
B.S., New Hampshire College, 1918. (1918-19, 1920-)
- WALSH, GEORGE W., *Instructor in Electrical Engineering*
B.S., Northeastern University, 1943. (1946-)
- WALSH, JOHN S., *Associate Professor of Languages*
A.B., Harvard University, 1915; M.A., Boston University, 1928.
(1922-)
- WARREN, RICHARD, *Extension Assistant Professor of Poultry Husbandry*
B.S., Cornell University, 1934; M.S., *ibid.*, 1935. (1944-)
- WEBBER, LAURANCE E., *Research Assistant Professor, Engineering
Experiment Station*
B.S., University of New Hampshire, 1934; M.E., *ibid.*, 1940; M.S.
in M.E., *ibid.*, 1946. (1937-)

THE UNIVERSITY FACULTY

- WEBSTER, HAROLD E., JR., *Instructor in Geology*
B.S., University of New Hampshire, 1941. (1947-)
- WEBSTER, ROBERT G., *Associate Professor of English*
B.A., University of New Hampshire, 1926; M.A., *ibid.*, 1930.
(1927-)
- WELCH, ALBERT G., *Research Assistant Professor, Engineering Experiment Station*
B.S., University of New Hampshire, 1936; M.S., *ibid.*, 1941.
(1937-)
- WELCH, AUSTIN H., *Instructor in Mechanical Engineering*
B.S., Worcester Polytechnic Institute, 1919. (1946-)
- WEST, ELMER D., *Director of Admissions and Counseling, Director of the Summer Session, and Associate Professor of Psychology*
A.B., Ohio University, 1930; Ed.M., Harvard University, 1934; Ed.D., *ibid.*, 1935. (1946-)
- WESTON, RUTH C., *Club Agent in Belknap County*
B.A., New Hampshire College, 1921. (1929-)
- WHEATON, PHILIP D., *Instructor in Speech*
A.B., Clark University, 1938; Ed.M., *ibid.*, 1945. (1947-)
- WHITE, DOROTHY M., *Associate Club Agent in Merrimack County*
B.S., University of New Hampshire, 1940. (1946-)
- WHITTEMORE, MARGARET T., *Instructor in Chemistry*
B.S., University of New Hampshire, 1947. (1947-)
- WIESEN, GEORGE W., JR., *Club Agent in Coös County*
B.S., State Teachers College, Indiana, Penn., 1941; M.S., Teachers College, Columbia University, 1946. (1947-)
- WILKINS, DORIS F., *Instructor in the Arts*
O.T.R., Boston School of Occupational Therapy, 1923. (1944-)
- *WILLIAMSON, JAMES, *Associate Professor of Industrial Management*
B.S., Manchester (England) Institute of Technology, 1911. (1946-)
- WILSON, WERNETH L., *Assistant State Club Leader*
B.S., West Virginia University, 1938. (September 15, 1947-)
- WILSON, W. ROSS, *Agricultural Agent in Grafton County*
B.S., Cornell University, 1912. (1912-)
- WOODRUFF, RUTH J., *Dean of Women and Associate Professor of Economics*
A.B., Bryn Mawr, 1919; A.M., *ibid.*, 1920; Ph.D., Radcliffe, 1931.
(1931-)

UNIVERSITY OF NEW HAMPSHIRE

†WOODWORTH, HARRY C., *Professor of Agricultural Economics*

B.S., University of Illinois, 1909; M.S., Cornell University, 1916.
(1921-)

WOOSTER, CAROLINE S., *Assistant Professor of Physical Education for Women*

Sargent School for Physical Education, 1926; B.S., University of New Hampshire, 1934. (1932-35, 1939-40, 1942-)

WORTHEN, ROY E., *Assistant Club Agent in Rockingham County*

B.S., University of New Hampshire, 1943. (1946-)

YALE, WILLIAM, *Associate Professor of History*

Ph.B., Sheffield Scientific School, Yale University, 1910; M.A., University of New Hampshire, 1928. (1928-)

†YEAGER, ALBERT F., *Professor of Horticulture*

B.S., Kansas State College, 1912; M.S., Oregon Agricultural College, 1916; Ph.D., Iowa State College, 1936. (1939-)

ZIMMERMAN, OSWALD T., *Professor of Chemical Engineering*

B.S.E. (Ch.E.), University of Michigan, 1929; M.S.E., *ibid.*, 1931; Ph.D., *ibid.*, 1934. (1938-)

MAJOR ADMINISTRATIVE ASSISTANTS

WALTER B. ADAMS, *Manager of University Bookstore*
THERESA R. BATCHELDER, *Mail Clerk*
GLADYS H. BLAISDELL, *Assistant to the Treasurer*
MAISIE C. BURPEE, *Secretary to the Dean, College of Agriculture, and
to the Director, Agricultural Experiment Station*
LILLIAN F. CURTIS, *Secretary to the President*
WILLIAM M. DELBROUCK, *Manager, Printing and Duplicating Service*
MILDRED M. FLANDERS, *Secretary to the Dean of the College of
Technology*
RUTH M. FOLSOM, *Secretary to the Treasurer*
CORA FRENCH, *Secretary to the Director of the General Extension
Service*
DOROTHY S. HANSON, *Secretary to the Dean, College of Liberal Arts*
ALBERT D. LITTLEHALE, *Herdsman, Agricultural Experimental Station*
PHYLLIS McDONALD, B.A., *Director, Durham Notch Hall*
BEATRICE M. RICHMOND, *Cashier, Business Office*
BETTY G. SANBORN, *Seed Analyst*
RUSSELL C. SMITH, B.A., *Purchasing Assistant*
SARAH C. THAMES, B.S., M.A., *Manager and Dietitian, University
Dining Hall*

HOUSE DIRECTORS

LULIA T. ANDREWS, *Scott Hall*
FANNY T. COBB, *Commons*
LOUISE M. COBB, *Engelhardt Hall*
ARLINE B. DAME, *Hetzel Hall*
ESTHER M. DUNNING, *Congreve Hall*
AMERICA F. DURRANCE, L.I., *Hunter Hall*
EDITH R. EDWARDS, *East and West Halls*
MINNA B. HYDE, B.A., *Fairchild Hall*
BESS H. MAULDIN, *Schofield House*
EDNA A. McLELLAN, *Congreve North*
ALIDA H. PEARL, *Smith Hall*
JEANNETTE I. ROBERTS, *Grant House*
MARCIA N. SANDERS, *House Director Emeritus*
SUZANNE SICKMON, *Assistant to House Director, Congreve Hall*
MARGARET D. WALLACE, A.B., *Gibbs Hall*
ELIZABETH A. WHITTEMORE, *Brook House*



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HISTORY

The educational institution, now known as the University of New Hampshire, was established as a college in 1866. At that time, the State of New Hampshire accepted the provisions of the Federal Morrill Act and established the New Hampshire College of Agriculture and Mechanic Arts.

This national legislation, which had been approved by President Lincoln in 1862, provided for an allotment of public lands to each state for instituting such a college. In place of land New Hampshire accepted scrip and, selling this for \$80,000, founded the College at Hanover in conjunction with Dartmouth College. For a quarter of a century the institution remained a branch of Dartmouth with an average enrollment of about 25 students. In 1888, through the Federal Hatch Act, a State Agricultural Experiment Station was also established as a part of the College.

Meanwhile, there lay in a legal adviser's safe in Durham the will, made in 1856, of a farmer, Benjamin Thompson, bequeathing his entire estate to the people of New Hampshire on condition that the State establish on his land a College of Agriculture. No one had known of his proposed philanthropy. The Thompson estate then amounted in land and securities to \$300,000, but this was to lie untouched, at compound interest, for a period of 20 years. When, at last, in 1912, it first became available, it amounted to approximately \$800,000.

When the terms of the will became known, in 1890, the Legislature promptly made the necessary enactments to establish the College at Durham. The enthusiastic Senior Class of 1892 journeyed down from Hanover to hold its Commencement Exercises in the College's first new building — a cow barn. As rapidly as possible, the State erected four other buildings, Thompson Hall, Conant Hall, Nesmith Hall, and the College Shops, which were ready for occupancy in 1893 by a group of 64 students, including 10 women.

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In 1911, the Trustees authorized the setting up of an Agricultural Extension Service which was further developed later by Federal and State appropriations to make possible headquarters, with County Agricultural Extension Agents in each county of the State.

By 1914, constant expansion of the student body resulted in an administrative division of the College into three groups: Agriculture, Engineering, and Arts and Sciences.

Moved by a devoted alumni body and the more than 1,000 students then enrolled, the General Court, in 1923, renamed the College the University of New Hampshire, creating within it the three Colleges of Agriculture, Technology, and Liberal Arts. Two years later, it permanently provided for the University's support by granting it an annual income of one mill for each dollar of the assessed valuation of all taxable property in the State. In 1947, the General Court increased this amount to one and one-half mills for each dollar of assessed valuation.

Today, the University comprises the three Colleges and the Agricultural and Engineering Experiment Stations, the General Extension Service, the Summer School, the Graduate School, and the Forestry Summer Camp in the White Mountains.

ORGANIZATION

The government of the University of New Hampshire is vested in a Board of Trustees, thirteen in number, of which the Governor of the State, the Commissioner of Agriculture, and the President of the University are members *ex officio*. Two members one of whom must be a resident of New Hampshire, are elected by the Alumni of the University, and eight members are appointed by the Governor of the State.

The University Senate, a representative body elected by and from the Faculty, has legislative jurisdiction in matters of student government and educational policy. Within the Senate is the University Council which acts in an advisory capacity to the President and serves as an Executive Committee between meetings of the Senate. Details of the University organization are given in the current *Staff Handbook of Official Information*.

INSTRUCTION

RESIDENT INSTRUCTION is offered in the College of Agriculture, the College of Technology, the College of Liberal Arts, the Graduate School, the Department of Physical Education, and the Department of Military Science and Tactics.

INSTRUCTION

THE SUMMER SCHOOL has been, since 1922, an integral part of the University program. Prior to that time, 1894 to 1897, a Summer School in Biology had been conducted. Courses are now offered in the Summer School by the three Colleges and the Graduate School to meet the needs of teachers, administrators, and supervisors of elementary and secondary schools; students who seek special professional preparation or are working for undergraduate or graduate degrees; students who anticipate courses or are supplying deficiencies; qualified and mature persons who wish courses for general cultural purposes. Qualified teachers in method and subject matter are drawn from the University Faculty and are supplemented by specialists selected for their attainments in particular fields at other institutions. The Catalogue of the Summer School gives specific information as to courses.

In addition to the offerings available at the University in Durham, summer instruction is given in Forestry and Fish and Game Management at the Forestry Summer Camp.

UNIVERSITY DEGREES.—A student in the College of Agriculture or the College of Technology, who is a candidate for a degree, must meet all the requirements of his elected curriculum as set forth in the Catalogue for the year in which he first pursues that curriculum unless the College which has jurisdiction over the curriculum makes changes applicable to all students pursuing it.

In the College of Liberal Arts, a student's candidacy for a degree will be determined by his satisfaction of the university, college, major, or curriculum requirements in force at the time of his admission to the college either as a beginning student or as a transfer. A student may petition to satisfy the university, college, major, or curriculum requirements that may be in force at any time during his residence. Such a student shall be held, however, for all of the academic requirements of the Catalogue under which he seeks a degree; not a portion thereof. The new Catalogue becomes effective on July 1 in each year.

The University reserves the right to withdraw any course or curriculum announced in the Catalogue or to substitute other courses or curriculums therefor. A student must also meet such new regulations as may be subsequently adopted by the University and made applicable to him; and he is also held responsible for such other rules and regulations as may be published in the *Official Handbook for Students*. The following degrees are conferred:

Graduate School—Master of Science, Master of Arts, Master of Education, and Master of Science in Engineering.

College of Agriculture—Bachelor of Science.

College of Technology—Professional degrees of Mechanical Engineer, Civil Engineer, and Electrical Engineer; Bachelor of Science in

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Chemistry, Chemical Engineering, Civil Engineering, Electrical Engineering, Mechanical Engineering, Physics.

College of Liberal Arts — Bachelor of Arts, Bachelor of Science.

CERTIFICATE — *College of Agriculture* — In the Applied Farming Curriculum, a Certificate of Graduation.

RESERVE OFFICERS TRAINING CORPS — In co-operation with the Federal Government the University maintains a Reserve Officers Training Corps as a part of the Federal system to provide systematic military training for school and college students.

While the Federal Government supervises the training, details officers and non-commissioned officers of the Army and of the Air Force as instructors, and provides the necessary equipment, students undergoing this instruction who are members of the R.O.T.C. are in no way members of the military forces of the Government. They remain civilians, and, as regards obligations to serve the Government are in the same category as students who are not members of the R.O.T.C., in that enrollment in the R.O.T.C. involves no additional obligation as to Military Service. At the present time, students formally enrolled in the Advanced Course are exempt from registration, induction, training, or service under section 5a of the Selective Training and Service Act of 1940 as amended. They receive a monetary allowance from the Government and, in return, agree to complete the course and to attend an R.O.T.C. Summer Camp. Emoluments received are in addition to benefits received through the "GI Bill of Rights".

Students enrolled in the R.O.T.C. are furnished with uniforms which are worn during military instruction when prescribed only. An expense to those enrolled in the basic course is the purchase of a special shirt and tie. Only tan shoes and tan socks are authorized to be worn with the uniform.

A deposit of \$15 is required of each student having military clothing and equipment in his possession. At the end of the academic year, or upon a student's severing his connection with the University, this deposit will be refunded to him upon the satisfactory return to the University of all military property loaned — except that a reasonable deduction will be made to cover any damage beyond natural wear and tear, or for the loss of any of the equipment.

Instruction offered in the basic course is of a general type. In general, any physically qualified male Junior who completes the basic may enroll in the Advanced R.O.T.C. Course in order to qualify for a reserve commission upon graduation. At present, he may elect either Air, Artillery, or Infantry training, and those students pursuing certain scientific and technical courses may, if they so desire, qualify and apply for commission in such technical branches as chemical, engineer,

INSTRUCTION

ordnance, and signal. R.O.T.C. students designated as "Distinguished Military Students" are also eligible to apply for direct appointment in the regular Army or Air Force upon graduation.

INSTRUCTION OF LESS THAN COLLEGE GRADE is made available by the University in the Applied Farming Curriculum. The purpose of this curriculum, organized in the College of Agriculture, is to give the greatest amount of practical training that is possible during a two-year period of time to students who cannot attempt the four-year curriculum. It is directly administered as a separate unit, and a trained teacher of agriculture is in charge with his own staff of instructors. Assistance from any of the College departments or personnel in curriculum matters is available. Any high-school graduate of good character, or any student who has completed a minimum of two years of high school and is 18 years of age or over, may be admitted. Two academic years of residence and field training or supervised farm experience during the summer months are required for graduation. A special bulletin of the Applied Farming Curriculum may be secured from the Office of the Dean of Student Administration or from the Office of the Applied Farming Curriculum.

STUDENT PERSONNEL SERVICES

University responsibilities for student activities and welfare outside the formal academic organization are co-ordinated through the Dean of Student Administration, an office established in March, 1946. The activities in this area include supervision of student health, counseling, living arrangements, employment service, extra-curricular activities, student financing, academic record keeping, maintenance of academic standards, and protection of personal standards of conduct.

THE UNIVERSITY HEALTH SERVICE, located in Hood House, is devoted to the protection, improvement, and maintenance of student health. A well-equipped out-patient clinic for diagnosis and treatment of ambulatory patients and a modern hospital of 26 beds, with private and semi-private rooms, wards, and an isolation division for communicable diseases, are constantly available for students who require medical or surgical care. Registered nurses are on duty at all times. Individual health guidance is given through personal conferences with the University physicians.

Payment of tuition entitles students to all medical care rendered by the University Physician and his staff. Injury and illness which require hospital confinement other than in Hood House, services of specialists, operations, ambulance service, special nurse, or special prescriptions are at the expense of the student. Bed patients at Hood House are charged \$1.00 per day. Office hours of the University Physician are from 8:00 A.M. to 4:30 P.M. daily except Saturday afternoons and Sundays.

THE PLACEMENT BUREAU assists Seniors and Alumni to secure posi-

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tions after graduation. It corresponds with and interviews school superintendents, personnel managers of industrial concerns, and others who employ college graduates, calling to their attention Seniors and Alumni who are seeking positions. The Placement Bureau and the Counseling Service are closely allied.

THE COUNSELING SERVICE assists students to discover vocational abilities and aptitudes and to develop educational plans to aid in the attainment of occupational aims. It informs students of educational opportunities and services available at the University and elsewhere. Personal guidance is furnished those students who need assistance in solving adjustment problems of an emotional and social nature.

RELIGIOUS ACTIVITIES.—Opportunities are provided in Durham for students to practice religion and to participate in religious life. The Hillel Club, the Newman Club, and the Student Christian Movement are the agencies through which the religious interests and life are fostered among the students. (See page 44.)

The Durham Community Church welcomes students to its many services of worship, to Sunday evening programs, and to share church activities through student affiliated membership. The pastor is a member *ex officio* of the staff of the Student Christian Movement.

The Episcopal Church provides a chaplain for students, and services are held each Sunday.

The parish of St. Thomas More serves the Roman Catholic students and faculty members. Sunday Masses are offered at 8 A.M. and 11 A.M. in Murkland Auditorium. Daily Mass is said at the rectory. The pastor is Chaplain of the Newman Club.

STUDENT GOVERNMENT

THE STUDENT COUNCIL is an organization of men students which serves as a liason body between the University Administration and the students, and as a representative group seeking to promote the best interests of the University. Members of the Council, except those who are members *ex officiis*, are elected by ballot each spring.

THE ASSOCIATION OF WOMEN STUDENTS promotes responsibility in maintaining high standards of personal conduct and encourages active co-operation in self-government. All women students are members of the Association.

ASSOCIATED STUDENT ORGANIZATIONS provides a central administration of business affairs for member organizations. A board of four faculty members and five students approves budgets of member organizations, recommends the amount of the Student Activities assessment, and sets standards for and supervises the financial activities of member organizations.

STUDENT ORGANIZATIONS

ACADEMIC, HONORARY, PROFESSIONAL, AND DEPARTMENTAL SOCIETIES AND INTEREST GROUPS

ALPHA CHI SIGMA, Professional Chemistry

ALPHA KAPPA DELTA, National Honorary, Sociology

ALPHA ZETA, National, Honorary, Agriculture

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS

AMERICAN SOCIETY OF CIVIL ENGINEERS Student Chapter (*See course description*)

*AMERICAN SOCIETY OF MECHANICAL ENGINEERS Student Chapter (*See course description*)

APPLIED FARMING ORGANIZATION

ASSOCIATION OF WOMEN DAY STUDENTS

THE BRIDGE CLUB

THE CHESS CLUB

COLLEGE CHEST

DELTA CHI, Honorary, Mathematics

DURHAM NOTCH HALL BOARD

THE ECONOMICS CLUB, Business, Economics, and Secretarial Students

FOLIO, a society composed of students interested in the reading and discussion of contemporary literature

THE FRENCH CLUB

THE GLEE CLUB has two organizations, one for men and one for women. Membership is open to undergraduates interested in choral singing who fulfill try-out requirements. The club presents several public programs a year.

THE GRADUATE SCIENCE SOCIETY, Graduate students and Faculty members engaged in research in the Sciences.

HOME ECONOMICS CLUB

THE HORTICULTURE CLUB for students interested in Horticulture

THE INTERFRATERNITY COUNCIL, composed of fraternity representatives regulating Campus interfraternity relations

THE INTERNATIONAL RELATIONS CLUB is one of over 450 chapters, throughout the world, that is assisted by the Carnegie Endowment for International Peace.

JUNIOR GREETERS OF AMERICA.—Chapter No. 1 of this countrywide organization sponsored by hotel executives is operated by the students of Hotel Administration. Membership on this Campus makes automatic

UNIVERSITY OF NEW HAMPSHIRE

the acceptance of the graduate in the parent organization, International Greeters, a very definite start toward success in the hotel industry.

KAPPA DELTA PI, Honorary, Education

LAMBDA PI, Language

THE LENS AND SHUTTER CLUB, organized for group study and enjoyment of photography

LIBERAL CLUB

MASK AND DAGGER is a dramatic society which promotes interest and participation in dramatics on Campus. It assists in the production of one-act and three-act plays each year. Its members are chosen from those who actively participate in the various phases of play production.

MIKE AND DIAL, composed of students interested in various phases of radio work — announcing, writing, and technical work

MINNESAENGER, German Club

THE NEW HAMPSHIRE CLUB, composed of men who have earned Varsity athletic letters

OCCUPATIONAL THERAPY CLUB

OPUS 45, Music Club

THE OUTING CLUB sponsors out-of-doors activities, especially mountain climbing and skiing, and conducts the annual Winter Carnival and the University Horse Show. The club owns cabins in Franconia Notch, at Jackson, and at Mendum's Pond, nine miles from Durham. Throughout the college year, weekly climbing or skiing trips are conducted. Membership is open to all students, faculty members, and alumni.

PAN HELLENIC co-ordinates interfraternity women's activities and regulates the rushing period.

PHI KAPPA PHI, National, Honorary, highest ranking Seniors selected from all Colleges

PHI LAMBDA PHI, Honorary Physics

PHI SIGMA, National, Honorary, Biology

PHI UPSILON OMICRON, Honorary, Home Economics

PI GAMMA MU, National, Honorary, Social Science

PLANT SCIENCE CLUB, Faculty members and Graduate assistants

THE POETRY WORKSHOP, a group of students interested in the study and writing of poetry

POULTRY SCIENCE CLUB

THE PRE-LAW CLUB

THE PRE-MEDICAL CLUB

THE PSYCHOLOGY CLUB

STUDENT ORGANIZATIONS

SCABBARD AND BLADE, Company F. Sixth Regiment, National, Honorary, Military

SOCIOLOGY CLUB

THE SOLON ENSEMBLE is composed of selected students and plays for dramatic productions.

THE SPANISH CLUB

THE STUDENT WORKSHOP, open to any student or student organization for the execution of personal or group projects. Typical activities include poster making for social events, printing of stationery, wood-working, making decorations, construction of sports equipment or room furniture, individual exploration in woodcarving, painting, photography, radio, and other hobby interests. Not a course; no laboratory fee; nothing assigned; requirements for safety and protection of persons and equipment only.

TAU KAPPA ALPHA National, Honorary, Debate and Oratory

THE UNIVERSITY BAND is composed of members of the University Regiment and selected students

THE UNIVERSITY CHOIR, advanced choral group

THE UNIVERSITY 4-H CLUB, students who have engaged in boys' and girls' club extension work

THE UNIVERSITY SYMPHONY ORCHESTRA is composed of selected students

VECTOR SOCIETY, Honorary, Engineering

WENTACRES VETERANS ASSOCIATION provides recreational, social, and educational activities for its members and their families.

THE WILDCAT FLYING CLUB fosters interest in flying

THE WOMEN'S RECREATION ASSOCIATION includes all registered women students and provides opportunity for participation in extra-curricular sports. The organization owns a cabin at Mendum's Pond for outings and sponsors Campus social events.

THE WOMEN VETERANS' ORGANIZATION

THE YACHT CLUB, open to students, Faculty and alumni, furthers the sport of intercollegiate racing, and provides sailing facilities for members. The club owns a fleet of Town Class Junior sloops which are anchored on Great Bay, three miles from Durham.

SOCIAL HONORARY SOCIETIES

THE BLUE KEY, Senior men leaders

MORTAR BOARD, Senior women leaders

SENIOR SKULLS, Senior men leaders

UNIVERSITY OF NEW HAMPSHIRE

STUDENT PUBLICATIONS

THE GRANITE is an illustrated annual published by the Junior Class.

THE NEW HAMPSHIRE, weekly newspaper, presents Campus and Alumni news and is published by a Student Editorial Board.

THE NEW HAMPSHIRE STUDENT WRITER, a collection of the best undergraduate prose and verse of the year, is published annually under the supervision of the Department of English.

RELIGIOUS ORGANIZATIONS

THE HILLEL CLUB is an organization to bring to Jewish students a more adequate knowledge of their heritage, to make Jewish religious and cultural values vital and revelant for the college generation, and to foster friendship, co-operation, and understanding among the various religious groups on the Campus. Activities include religious services, holiday observances, lectures, musicals, classes in Jewish studies, discussion groups, and the maintenance of a library relative to Jewish study which is open to all students. A Rabbi is the Counselor to the students.

THE NEWMAN CLUB, a club of Catholic culture and fellowship, fosters the spiritual, intellectual, and social interests of Catholic students. It is a member of the Newman Club Federation. Activities include corporate communions, discussion study groups, lectures, dramatics, parties, dances, etc. A Reading Room is provided in New Hampshire Hall.

A CHRISTIAN SCIENCE ORGANIZATION welcomes all who are interested to its weekly testimonial services.

THE STUDENT CHRISTIAN MOVEMENT is a fellowship of students united in the desire to understand the Christian faith and live the Christian life in realistic awareness. The Cabinet plans and carries out a Sunday Evening Fellowship, Freshman Camp, Deputations, Bible Study, Conferences, Religious Emphasis Week, Faculty Firesides and Programs on World Responsibilities. The Canterbury Club and Channing Club foster the religious interests of their respective groups. The S.C. M. is affiliated with the Student Christian Movement of New England and the World Christian Federation.

CHRISTIAN WORK, INC. sponsors the Student Christian Movement. Its Advisory Board has representatives from the churches of New Hampshire through seven denominational agencies, the State Y.M.C.A., the Y.W.C.A., and from Alumni, Faculty, and students of the University of New Hampshire.

THE UNIVERSITY RELIGIOUS COUNCIL represents the co-operative religious work of the Hillel Club, the Newman Club, and the Student Christian Movement. Projects include Religious Emphasis Week, recreation, radio programs, and publicity.

STUDENT ORGANIZATIONS

SOCIAL ORGANIZATIONS, FRATERNITIES, AND SORORITIES

THE ASSOCIATION OF WOMEN DAY STUDENTS furthers the interests of women commuters in the cultural and social activities of the University.

DORMITORY AND CLASS ORGANIZATIONS.—Each of these groups is organized to promote its social activities.

FRATERNITIES.* — Kappa Sigma, (1894) 1901; Sigma Alpha Epsilon, (1894) 1917; Theta Chi, (1903) 1910; Lambda Chi Alpha, (1906) 1918; Alpha Tau Omega, (1907) 1917; Phi Mu Delta, (1914) 1918; Pi Kappa Alpha, (1921) 1929; Sigma Beta, (1921); Phi Alpha, (1922) 1924; Theta Kappa Phi, (1922) 1923; Alpha Gamma Rho, 1924; Phi Delta Upsilon, (1924); Tau Kappa Epsilon, (1926) 1932.

SORORITIES.* — Chi Omega, (1897) 1915; Alpha Chi Omega, (1913) 1924; Alpha Xi Delta, (1913) 1914; Phi Mu, (1916), 1919; Kappa Delta, (1919) 1929; Theta Upsilon, (1926) 1930; Pi Lambda Sigma, 1929.

OTHER SERVICES AND FACILITIES

THE GENERAL EXTENSION SERVICE is designed to make available to urban and rural areas the contributions of the University's Research bodies and its Faculty, and to co-ordinate activities carried on with state agencies and organizations.

Rural work in Agriculture and Home Economics is conducted co-operatively with the United States Department of Agriculture and the County Farm Bureaus through a staff of 64 members. Specialists conduct demonstrations in Farm Management, Dairying, Forestry, Soils and Crops, Poultry, Horticulture, Marketing, Engineering, Nutrition, Social Organization and Recreation, Clothing and Home Management; and each county has Agricultural, Home Demonstration, and 4-H Club Agents. Through a co-operative arrangement with the State Forestry and Recreation Commission and the United States Forest Service, eight County Extension Foresters cover the ten counties of the state.

Extra-mural courses with credit and extension courses without credit are being developed off campus to the extent that demand warrants and teaching personnel are available. A minimum of fifteen enrollees is required; classes are held weekly; and fees amount to \$8, \$15 and \$22 respectively for one, two, and three credit-hours. Courses are taught by regular members of the University's resident Faculty or by staff members of co-ordinate rank.

*The dates listed indicate (1) the date (in parentheses) of founding as local fraternity, and (2) the date of granting a charter to the national fraternities.

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Special courses for the benefit of industry dealing with industrial office organization and management, personnel organization and administration, industrial supervision and foremanship, human relations in industry, sales and sales management, etc., are being developed by the Extension Specialist in Industrial Management. A catalogue describing these is available upon application.

The General Extension Service operates the University Editorial Offices, including the publication of all official bulletins, the news, radio and photographic services, and the University Broadcasting Studio. Its Audio-Visual Center maintains a library of educational sound and silent films, standard lantern slides, film strips and transcriptions, which are available with the co-operation of the State Department of Education to the schools of this state and northern New England.

The Extension Service also makes lecture engagements for Faculty speakers; conducts forums; and arranges for institutes, conferences, and special short courses, on or off the campus.

THE AGRICULTURAL EXPERIMENT STATION is concerned with solving the more important agricultural problems. It has as its purpose the bringing of science to agriculture and the betterment of rural life. Typical experimental projects involve the breeding and testing of improved crops and animals, studies of the nature and control of serious plant and animal diseases and pests, problems in weed control, studies on the development of better farm studies involving problems of farm labor efficiency, marketing of farm products. The usual tests of seeds, fertilizers, and soils are continued; plants and insects are identified; blood samples are tested; and post-mortem examinations of animals are made. Bulletins covering a wide range of subjects are printed for free distribution to all persons in the state who have use for them.

THE ENGINEERING EXPERIMENT STATION provides engineering and research facilities for the industries of the state and for various agencies of the state government. The personnel and facilities of the University are available through this agency to manufacturers for the solution of technical problems.

At the present time, in co-operation with the State Planning and Development Commission, a long-range program devoted to studies of wood-waste utilization is in progress.

An unusual opportunity is provided for properly qualified undergraduate and graduate students to participate in the technological work of the Engineering Experiment Station.

Provisions can be made for the establishment of industrial fellowships by both in-state and out-of-state industries. At the present time,

STUDENT ORGANIZATIONS

a number of firms have availed themselves of this opportunity to do specialized research in certain industrial fields.

THE BUREAU OF GOVERNMENT RESEARCH is designed to serve as the contact point between the University and town or city governments in the State. It acts as a clearing-house for problems of government administration at the local or state level, and aims to assist officials and citizens of New Hampshire interested in public problems.

THE FORESTRY SUMMER CAMP, located in the heart of the White Mountains at Passaconaway, includes a tract of 400 acres of timberland on which are examples of most of the northern forest types. The property is surrounded by the White Mountain National Forest which makes available to the camp more than a half million acres of the finest woodlands in the East. Students are housed in an attractive building, formerly a summer hotel. It not only affords adequate living facilities but also provides drafting rooms and laboratory space. The boundary of a national game area of 60,000 acres is less than a half mile from camp, and the Bartlett Experimental Forest is only a short distance away. National forest operations are carried on nearby and serve for purposes of instruction. Recreational activities include swimming, fishing, tennis, and mountain climbing. There are fifty mountain peaks within a ten-mile radius. Bartlett, Conway, and North Conway villages are easily accessible.

THE HAMILTON SMITH LIBRARY is the main building in the University library system, which includes various branches such as the Plant and Animal Sciences Library in Nesmith Hall, the James Hall Chemistry Library, the DeMeritt Hall Library of Engineering and Physics, and the Morrill Hall Bureau of Government Research Library. It is a United States Government Depository Library. The book collection numbers 146,600 volumes. One thousand and sixty-six periodicals are received. In the Newspaper Room 51 newspapers, including a half dozen metropolitan dailies and most of the New Hampshire weeklies are received. A generous browsing area facilitates the selection of books for pleasure reading, and the open stacks give the student every opportunity to familiarize himself with the world of books.

Because the Hamilton Smith Library serves the townsfolk, as well as the Faculty and students of the University, there is a children's room (the Charlotte Thompson Room) well-stocked with the best in children's literature. This collection, used constantly by the children, provides an unusual laboratory for the students and others who plan to work with children and children's books.

Housed on the second floor is the Art Division. In its exhibit gallery is displayed a succession of loan exhibitions selected to appeal to a variety of interests. There is a collection of 1600 phonograph records the nucleus of which was a gift from the Carnegie Corporation of New York. There are three listening rooms. The largest of these, used

UNIVERSITY OF NEW HAMPSHIRE

also for group music appreciation, is the Philip Hale Room, which contains the desk, chair, and many of the books of the well-known music critic. Smoking is permitted in one study-room in the Library.

MUSEUM COLLECTIONS. Although the University has no museum, there are several collections housed in various buildings. At present, specimens are being collected to illustrate the zoölogy, geology, entomology, and Americana of New Hampshire. Many New Hampshire collectors and naturalists have made the University their permanent depository.

UNIVERSITY LANDS AND BUILDINGS

University lands comprise approximately 2300 acres. Lands at Durham total about 1500 acres, of which some 170 acres are devoted to the campus proper and athletic fields; 316 acres to hay and mowing; 42 acres to orchards and gardens; 471 acres to forest; 464 acres to pasture; and 20 acres to ponds.

BUILDINGS FOR ADMINISTRATION, INSTRUCTION AND RESEARCH

THOMPSON HALL (1893), the general Administration building, is named for Benjamin Thompson, benefactor of the University. It contains the Offices of the President, the Business Office, the Offices of the Dean of Student Administration, the Office of the Alumni Secretary, the Offices of the Deans of Men and Women, and the Offices of the General Extension Service. Located on the third floor are the library and studio of the Music organizations, the office and classroom of the Speech Section of the English Department, and the University Radio Studio. The University Bookstore is also in this building.

CONANT HALL (1893), named for John Conant of Jaffrey, a generous friend of the College, houses the Departments of Civil Engineering and Geology and the Engineering Experiment Station. A Government Weather Observatory is located here to serve airline travel through regular hourly recordings of weather conditions.

NESMITH HALL (1893, remodeled and enlarged in 1939), houses all University Plant and Animal Science Departments except Dairy Husbandry and Forestry. One of the four original Campus buildings, it has been enlarged and renovated into a modern science center, four times its former size. It is named for Judge George W. Nesmith of Franklin, a former President of the Board of Trustees.

CHARLES E. HEWITT HALL (1893, enlarged and remodeled in 1946-7) houses the laboratories in machine, forge, and welding shop practice, and the Department of The Arts. Located also in this building are the internal combustion and aeronautical laboratories; the offices of the Department of Psychology and the Department of Hotel Administration; the Photographic Studio and the Educational Film Library; the

UNIVERSITY LANDS AND BUILDINGS

Student Workshop; the University Printing and Duplicating Service; and the Cold-Storage Plant used by the Department of Horticulture for the fruit from the University orchards; and as a laboratory for instruction in the handling and storage of horticultural products. It is named for Charles E. Hewitt, first Dean of the College of Technology.

MORRILL HALL (1902) serves as the headquarters for the College of Agriculture, the Bureau of Government Research, and the Departments of Social Sciences, including Economics and Business Administration, Sociology, History, Agricultural Economics, and Government. It is named for Senator Justin Morrill of Vermont, sponsor of the Land Grant Act.

BALLARD HALL (1905, remodeled in 1942) affords classroom, studio, and office facilities for the Department of Music, and serves as headquarters for *The New Hampshire*, *The Granite*, and a number of student organizations.

NEW HAMPSHIRE HALL (1906, remodeled in 1940) provides facilities for Physical Education for Women and for student organizations including the Hillel Club, the Newman Club, and the Student Christian Movement; it contains a lounge room, an auditorium seating 1100 and a completely equipped stage for dramatic productions.

HAMILTON SMITH LIBRARY (1907) was erected by means of a union of funds left by Hamilton Smith of Durham for a town library, and a gift by the Carnegie Corporation, and funds provided by the state. In 1937, large wings were added to each side of the original building thereby doubling reading and service areas. The next year the entire second floor was remodeled to include sound-proof music listening rooms, an exhibition gallery, and a fine arts reading and reference room. In 1940, a new stack wing was added.

DAIRY BUILDING (1910) is arranged and equipped for purposes of instruction in Dairy Husbandry and Manufacture.

DEMERITT HALL (1914), named for Albert DeMeritt of Durham, is the headquarters of the College of Technology and includes classrooms, laboratories, and offices of the Department of Mechanical and Electrical Engineering and Physics.

MURKLAND HALL (1927), named for Charles Sumner Murkland, President from 1893 to 1903, is the headquarters of the College of Liberal Arts and includes classrooms and offices for the Departments of English, Languages, Mathematics and Education.

CHARLES JAMES HALL (1929), bearing the name of a former Professor of Chemistry, provides lecture rooms and laboratories for instruction and research for the Departments of Agricultural and Biological Chemistry, Chemistry, Chemical Engineering, and the Engineering Experiment Station.

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CHARLES HARVEY HOOD HOUSE (1932), headquarters for the University Student Helath Service, outpatient clinic and hospital, is the gift of the late Charles Harvey Hood and Mrs. Hood of Boston. It was presented to the Trustees with funds for its maintenance, in 1930, the fiftieth anniversary of Mr. Hood's graduation from the University of New Hampshire. It is completely furnished and equipped for all types of medical and emergency surgical service.

PETTEE HALL (1938), named in honor of the late Dean Charles H. Pettee, houses the Departments of Agricultural Engineering, Home Economics, and Military Science.

TEXTILE AND CRAFT COTTAGE is equipped with looms, rug frames, tools, and supplies for several types of handcraft projects.

ANIMAL NUTRITION LABORATORY is maintained for the research studies in animal metabolism conducted by the Agricultural Experiment Station.

BUILDINGS AND GROUNDS SERVICE BUILDING (1940) contains the office of the Superintendent of Properties, shops and storage rooms of the Buildings and Grounds Service Departments, and the University Rifle Range. The University and Town of Durham fire station is also located in this building.

DURHAM NOTCH HALL (1947), a war-surplus recreation building, was moved to the Campus by the Federal Works Agency. It provides for the serving of light lunches through the day and evening, a center for commuting students, and facilities for social and organization activities.

FORESTRY BUILDING (1947), a war-surplus building, was moved to the Campus by the Federal Works Agency. It houses the Department of Forestry.

FARM LANDS AND BUILDINGS

THE UNIVERSITY FARM, maintained for instruction and research, includes the 42-acre Horticultural Farm, the Poultry Plant, the several livestock barns, extensive greenhouses, and the University Forest. The Horticultural Farm has buildings of its own, an unusually fine orchard site, acreage for small fruit and vegetable production, an apiary, and a packing plant equipped with a grader and other apparatus for the handling of fruit. In the poultry unit are several houses and range facilities, a special pathological laboratory for disease diagnosis, and experimental flocks of hens and turkeys. Livestock barns include the Dairy Barns, providing accommodations for 120 dairy animals and containing a modern Milk House; the Stock Barn, housing purebred herds of cattle and sheep, and the thoroughbred stallions; the Stable of the New Hampshire Racing Commission; the Horse Barn; the experimental Sheep Barn; and the Piggery. The University Forest

UNIVERSITY LANDS AND BUILDINGS

has 655 acres of old and second-growth timber and a nursery for the growing of seedling trees.

ATHLETIC FACILITIES

UNIVERSITY FIELD HOUSE (1938) has a main floor area of nearly half an acre. It provides opportunity for indoor football and baseball practice and track. A movable wooden floor and bleachers for 2500 spectators are installed for basketball. Offices and classrooms of the Department of Physical Education for Men are also located here.

NEW HAMPSHIRE HALL (1906 and 1940) accommodates the Department of Physical Education for Women.

LEWIS FIELDS (1936), outdoor recreational center, are named for Edward Morgan Lewis, President from 1927 to 1936. They include six fields for football, soccer, and lacrosse, four baseball diamonds, a cinder track with a 220-yard straightaway, pits and runways for jumping and vaulting, an out-door wooden track, fourteen composition tennis courts, an ice hockey rink, concrete bleachers seating 1750 spectators at baseball games, and concrete stands seating 5000 spectators at football, track and field contests. The equipment was built in co-operation with Federal work-relief agencies. Materials used in the construction of the main field stands were provided by Alumni of the University as the first project of the Alumni Fund.

BRACKETT FIELD (1936), the Varsity baseball field on Lewis Fields, is named in honor of William H. L. Brackett, '14, prominent student leader of his college generation, who died from wounds received during World War I.

MEMORIAL FIELD (1922), outdoor recreational center for women students, was the first gift of major importance from the Alumni to the University, and is a memorial to the eighteen New Hampshire men who lost their lives in World War I.

SWIMMING POOL (1938) is available, during the summer, for general swimming and classes of instruction. Life-guard service, maintained by the University, a graduated diving tower, and dressing and locker facilities are features of the swimming unit. The water is scientifically treated through a filtration plant. In the winter months the pool provides skating facilities.

RESIDENTIAL HALLS

COMMONS (1919) contains the Freshman dining hall, the guests' dining room, the Faculty dining room, a cafeteria, a trophy and lounge room, student organization rooms, and dormitory facilities for 44 students.

FAIRCHILD HALL (1916) honors Edward Thomson Fairchild, President from 1912 to 1917. It furnishes accommodations for 113 undergraduate men.

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EAST AND WEST HALLS (1918), erected by the United States Government to furnish housing facilities for troops in training at the College during World War I, provide comfortable quarters at low cost for 234 men.

SCHOFIELD HOUSE (1895, remodeled and enlarged in 1943) furnishes quarters for 52 undergraduate women.

SMITH HALL (1908), originally constructed through the generosity of Mrs. Shirley Onderdonk of Durham as a memorial to her mother, Mrs. Alice Hamilton Smith, furnishes rooming facilities for 79 women students.

CONGREVE HALL (1920) accommodates 233 undergraduate women. The first unit was built with funds made available through the will of Mrs. Alice Hamilton Smith of Durham and bears her daughter's name. A second unit was added in 1938, and the building was completed in 1940.

HETZEL HALL (1925), named for Ralph D. Hetzel, President from 1917 to 1927, accommodates 156 undergraduate men.

SCOTT HALL (1932), named for Clarence Watkins Scott, Professor of History from 1879 to 1930, furnishes accommodations for 119 undergraduate women.

ELIZABETH DEMERITT HOUSE (1931), named for Mrs. Elizabeth P. DeMeritt, Dean of Women from 1919 to 1931, and maintained for practice in Home Management, is a modified Cape Cod cottage, thoroughly equipped with modern household devices. It houses six resident students, two instructors, and a play school for pre-school children.

LUELLA PETTEE HOUSE (1941), named for Mrs. Luella Pettee, wife of former Dean Charles H. Pettee, provides quarters for members of the staffs of the University Service Departments.

GRANT HOUSE (1942) furnishes quarters for 16 undergraduate women.

ENGELHARDT HALL (1946), named for the late Fred Engelhardt President from 1937 to 1944, accommodates 169 men.

GIBBS HALL (1946) honors William David Gibbs, President from 1903 to 1912. It furnishes accommodations for 169 men.

HUNTER HALL (1946) is named for Roy Deneale Hunter, a Trustee from 1916 to 1944; President of the Board from 1931 to 1944, and acting President of the University 1936-1937, and in 1944. It accommodates 169 men.

BROOK HOUSE provides quarters for 13 undergraduate women.

COLLEGE ROAD APARTMENTS and DORMITORY (1946-7) are war-surplus housing units moved to the Campus by the Federal Public Housing Authority for the housing of veterans. Quarters are provided for 54 men and 18 families.

GENERAL INFORMATION

METHODS OF ADMISSION

The University will admit without examination properly prepared New Hampshire students who are graduates of high schools or academies of New Hampshire that are approved by the State Board of Education, or those who are graduates of other accredited preparatory schools.

Applicants must have a scholastic record ranking in the upper two-fifths of the graduating class in order to be eligible for admission without examination.

The number of non-state students admitted each year is limited by law to a small proportion of the entering class. Selection of out-of-state candidates is made primarily on the basis of their high-school records, but such traits as character, leadership, and initiative will be taken into account. Because of the large number of New Hampshire students needing financial assistance in the form of employment, out-of-state applicants will be expected to give evidence of reasonable financial backing.

Applicants for admission are required to fill out an application form prepared by the University. Copies of this form may be obtained from secondary-school officials in New Hampshire or from the Office of the Dean of Student Administration.

An applicant for admission who is a resident of New Hampshire is required to remit \$10 with his application. One from outside the state is required to remit \$25. If the applicant is admitted to the University, his advance payment will be applied to the first semester's tuition; if he is not admitted, his advance payment will be returned. In the case of the applicant who is accepted for admission but does not enter, the advance payment will not be returned. Remittance should be made either by check or by money order payable directly to the University of New Hampshire and should be sent with the application for admission.

No application for admission in September will be considered before the middle of the preceding February. To insure consideration before the out-of-state quota is filled, out-of-state students should file applications not later than the middle of March. To insure eligibility for financial aid and a choice of dormitory rooms, in-state students should apply during the spring. It is understood that the preparatory work of students applying during the spring will be completed by the end of the school year. No application will be considered which is not complete one week before the start of Orientation Week.

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Candidates for admission to the Freshman Class must show evidence, either by credential or examination, that they are prepared in 15 units.

An entrance unit represents one study of four or five recitations a week for one year. It is assumed that two hours of shop or laboratory work are equivalent to one hour of classroom work.

Preparatory subjects are divided into six groups. The minimum numbers of units which should be offered in each group are: Group A, English, 3; Group B, Foreign Languages, 2 in a single foreign language, but none required if Group C is offered; Group C, Mathematics, 2 or 3*, none for Liberal Arts if Group B is offered; Group D, Natural Science, 1; Group E; Social Science (including History), 1; Group F, Vocational Subjects and miscellaneous, none required. Elective units may be offered from all groups, including a fourth year of English. At least 12 of 15 units should be from Groups A, B, C, D, and E.

Cases not covered by the above statements will be decided by the Committee on Admission.

Candidates for advanced standing may be admitted on the basis of the work satisfactorily completed at the institution from which they come. Students leaving other institutions in poor scholastic standing will not be admitted.

Every candidate for admission claiming New Hampshire residence shall be required to procure a statement, signed by the Town or City Clerk, to the effect that his parents are residents of the town or city from which he purports to register. Students admitted from foreign countries or states other than New Hampshire shall be deemed to be non-resident students throughout the entire University Course unless and until the parents shall have gained *bona fide* residence in New Hampshire.

Students admitted to the University must present to the Director of the Student Health Service completed medical history and physical examination reports before registration can be completed. The forms for this report are furnished by the University.**

*This must be Mathematics preparing for further Mathematics; Commercial Arithmetic and Shop Mathematics are classed as Vocational Subjects. For students wishing to pursue courses in Engineering Chemistry or Physics, at least 3 units of Mathematics must be offered, including Elementary and Advanced Algebra and Plane and Solid Geometry.

**Exemption from these requirements may be secured only through submission of a written statement from parent or guardian which indicates that the request is made because of religious beliefs.

GENERAL INFORMATION

SPECIAL STUDENTS

A mature student who is not a candidate for a degree, upon presenting satisfactory evidence of his ability to carry successfully the desired courses, may be admitted as a special student for one year only, upon the approval of the Committee on Admission.

In choosing his studies he must have the approval of the Head of each Department in which he elects courses, and of the Deans of the Colleges concerned.

No credit earned by a special student shall count toward a degree except upon approval of the Committee on Admission.

ADVANCED STANDING

BY TRANSFER

Candidates for advanced standing from approved institutions may be admitted. Their status will be determined by the quantity and quality of the work completed at the institution from which they come, and by the quality of their work at the University of New Hampshire.

(1) Such students must file the same application for admission as required of Freshmen. In addition they must furnish, at least 30 days prior to the time of transfer to the University of New Hampshire, an official transcript of work done at institutions previously attended.

(2) All candidates for the bachelor's degree, admitted to advanced standing, must spend their last year in residence, either in course or in Summer School. This requires the completion of at least a quarter of the credits required for their degree.

(3) Regardless of the amount of advanced standing a student may secure, in no case will he be granted a bachelor's degree until he has satisfied the full requirements of the curriculum he may elect.

BY EXAMINATION

Mature students who desire to work for a bachelor's degree may secure some of the necessary credit by examination. Inquiries regarding the details of this arrangement should be addressed to the Dean of Student Administration.

ORIENTATION WEEK

Orientation Week was instituted at the University of New Hampshire in 1924. It is evident from a study of the results of the activities of this Week that it has served as a valuable means of adjusting new students, of creating right attitudes toward college work, and of minimizing the usual delays during the first few weeks of the regular term. The Week also affords an opportunity for the students to learn to know

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each other, to organize their efforts, to work together, to play together, and to become acquainted with the Campus, the buildings, the Faculty, and with the courses of study and the traditions of the University.

Attendance of all new students throughout Orientation Week will be obligatory.

FEES AND EXPENSES

The tuition fee is \$160 per year for residents of New Hampshire and \$360 for non-residents. This charge is all-inclusive, covering registration, laboratory, health, graduation fees, and admission to all intercollegiate athletic events. However, refundable deposits may be required to cover loss or breakage in certain departments. A charge will be made for individual lessons in music.

Any students registering for 8 credits or more per semester shall pay the full tuition. Any student registering for less than 8 credits shall pay \$6.00 per credit hour if a resident, and \$13.00 per credit hour if a non-resident.

ESTIMATE OF FRESHMAN EXPENSES FOR A YEAR

	<i>High</i>	<i>Average</i>	<i>Low</i>
Room (Dormitories)	\$110	\$100	\$ 70
Board (at Commons)	250	250	250
Tuition*	160	160	85
Books	60	50	35
Laundry	40	25	15
Incidentals†	110	75	45
Total	<u>\$730</u>	<u>\$660</u>	<u>\$500</u>

TUITION.—Tuition for each semester is payable in advance. Students who find it difficult or impossible to procure the necessary funds for the full amount due for a semester may make arrangements acceptable to the Treasurer for a series of payments during a semester.

CHANGES IN RATES.—The University reserves the right to adjust charges for such items as tuition, board, and room rent from time to time. Such changes will be held to a minimum and will be announced as far in advance as feasible.

Registration for eight or more credits entitles the student to admission to all home Varsity athletic contests.

*If not a resident of New Hampshire add \$200 to high and average and \$275 to low per year. If a resident and not a holder of a tuition grant, add \$75 to low.

†Expenses for travel, clothing, etc. vary with the individual student, and should be added.

FEES AND EXPENSES

ADVANCE TUITION PAYMENT.—An applicant for admission who is a resident of New Hampshire is required to remit \$10 with his application; one from outside the state is required to remit \$25. If the applicant is admitted to the University, his advance payment will be applied to the first semester's tuition; if he is not admitted, his advance payment will be returned. The advance payment of a student who is admitted but does not enter will not be returned.

MILITARY DEPOSIT.—Uniforms for members of the Reserve Officers Training Corps are provided in co-operation with the Federal Government. A deposit of \$15 is required of each student to whom military equipment is issued, refundable, minus lost or damaged articles, at the time of returning military equipment.

ATHLETIC LOCKER DEPOSIT.—Every student participating in the program of Physical Education and Athletics for Men and Physical Education for Women is required to deposit \$1.00 for a locker. This will be refunded upon return of the lock to the equipment room, less 25 cents per semester, to meet partially the expense of towel service.

STUDENT ACTIVITY TAX.—The Student Activity Tax, authorized by vote of the undergraduate students with the approval of the Board of Trustees, must be paid by each undergraduate at the time of registration. The revenue from the tax provides each student with *The New Hampshire*, student newspaper; *The Granite*, University Annual; Durham Notch Hall membership, student activity center; Student Government, and class activities. It is expected the 1948-1949 tax will be \$7.50.

BOOKS.—Students may purchase books, classroom and other supplies at the University Bookstore in Thompson Hall.

ROOMS.—The University has six dormitories for women and eight for men. All rooms are heated, lighted, and furnished. Bed linen, blankets, and towels, however, are provided by the individual student. Each women's dormitory is equipped with a laundry. A service room is provided in each dormitory where grills and irons may be used with safety. Prices range from \$70 to \$110 a year. Applications for rooms in the dormitories should be addressed to the Secretary, Office of Room Assignments, Thompson Hall, University of New Hampshire, Durham.

Students living in University dormitories are required to sign room contracts covering the college year.

A five-dollar (\$5.00) room deposit must accompany each application, this deposit to be forfeited if the room accepted is not occupied by the applicant. The deposit is held as a guarantee against breakage and will be returned at the close of the year or upon withdrawal.

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Room rent is payable in advance. For the Fall Semester room rent must be paid not later than August 15, and for other semesters during the registration periods. Rooms reserved will be held only until August 15 unless the Fall Semester's rent is paid before that date.

Rooms paid for and not occupied one day after registration may be declared vacant and the room rent returned, unless the individual holding the reservation makes a written request to the Dean of Men or Dean of Women to hold the room until a later date. The advance payment for the room will not be returned to those making this special request. No room will be reserved more than ten days after the registration date. Early application is necessary in order to secure a choice of rooms. Rooms in private dormitories or families may be secured for about the same prices as for those in University dormitories.

A woman student, unless living at home, is required to room in one of the women's dormitories or a sorority house, unless working for her room in a private family. A competent house director is in charge of each women's dormitory.

BOARD. — A dining hall is operated and supervised by the University for the accommodation and benefit of the students. All Freshmen, whose homes are not located in Durham, are required to board at the University Dining Hall for the first two semesters of attendance at the University. The aim of the compulsory regulation is to insure a broad fellowship and to safeguard the health of the first-year students by offering skilled dietetic oversight in the selection and preparation of their food. The Dining Hall is equipped with the best appliances for cooking and serving on a large scale, and is subject to constant sanitary inspection by the University Physician. Board is \$125 per semester, payable at registration for each semester.

The Dining Hall is not operated for profit. Savings made possible by reduced costs of operation are passed along to the students in the form of reduced board charges.

A cafeteria is open to all students of the upper classes who may desire to take advantage of the moderate price and the high quality of food available at the University Dining Hall.

PERSONAL CASH DEPOSITS. — Students are urged to arrange checking accounts in their home banks, or to place money on deposit in the Business Office until needed, in order to avoid possible loss resulting from keeping on hand considerable sums of money. Such banking arrangements will also facilitate payment of registration bills which are due and payable during the stipulated registration periods. The Business Office will accept and cash student checks.

UNIVERSITY AID TO STUDENTS

SELF-SUPPORT

A great many students earn their education in part by means of their own labor during summers and while in college. Students find employment as library assistants, assistants in instructional and research laboratories, proctors in dormitories, clerks and office assistants, waiters in the dining halls, student janitors, and student workers on the farms, and about the Campus. Others find employment each year in fraternities, sororities, and homes and stores in the community.

All students and prospective students are advised, however, to survey carefully their individual physical strengths and scholastic aptitudes before committing themselves to the arduous combination of intensive study and part-time employment.

Students are urged not to count too much upon earning their way the first year, and should be sure of at least \$150 from other sources for each semester of attendance. Inquiries from students concerning self-support should be addressed by women students to the Dean of Women and by men to the Dean of Men.

In order to insure an equitable distribution of University part-time employment, should it become insufficient to fill the demand, the University reserves the right to limit such employment to those students needing it most. Students in poor academic standing will usually be denied the right to University part-time employment.

Applications. — Application for part-time employment may be made through the Dean of Women, the Placement Bureau, or directly to the employing department.

Assistance in Finding Employment. — The Dean of Women, for women, and the Director of Placement, for men, will assist students in finding employment in the homes and business establishments of Durham. An ambitious, hard-working student usually will find steady part-time employment, either on- or off-campus.

Women Students. — Women students who wish to earn their room and board in private families must apply to the Dean of Women, who will supervise the making of arrangements. Freshmen women are advised against attempting to earn their room and board in this way unless they are in good physical condition and have excellent preparation for their University work.

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TUITION GRANTS

In order to enable students to attend the University, who would be unable to do so without some financial assistance, the Trustees award 250 Tuition Grants annually to residents of New Hampshire who have attended college for less than two semesters. Each Tuition Grant pays \$75 per year and is good for one year only.

Applications for these Tuition Grants must be returned to the Office of Student Administration not later than July 15 for the Fall Semester.

Recommendations for Tuition Grants may be made by the subordinate and Pomona Granges, State Senators, State Federation of Women's Clubs, University Alumni Clubs, and citizens of New Hampshire.

Upon investigation and approval Tuition Grants will be given to those whose need appears to the committee to be the greatest.

Tuition Grants will be forfeited at any time for misconduct or for failure to attain a satisfactory scholastic average for the first semester. A student placed on probation forfeits his Tuition Grant during the period of probation.

SCHOLARSHIPS

A limited number of scholarships are awarded annually to deserving students. In order to grant scholarships equitably the University requires full information of all applicants relative to the necessity for scholarship aid. Scholarship application blanks will be provided upon request to the office of Student Administration. Scholarship applications for the ensuing year should be filed by April 15.

These scholarships will be forfeited at any time for misconduct or failure to maintain a satisfactory scholastic average. A student placed on probation forfeits his scholarship during the semester of probation.

A more detailed description of the several classes of scholarships follows:

Conant Scholarships.—These scholarships, provided by the bequest of John Conant, of Jaffrey, pay \$75 at present and are good for one year. By terms of the bequest they are open to men taking agricultural curriculums and preference is given to residents of Cheshire County.

Nancy E. Lougee Memorial Scholarships.—Since 1921 the interest on \$5,000 bequeathed by Amos D. Lougee, of Somersworth, has been expended for scholarships of \$75 each. They will be assigned each year and will be good for one year only. No applications can be approved without satisfactory evidence that the candidates *would be unable to attend without the aid of the scholarship*. Until July 15 of each year, preference will be given to residents of Strafford County.

SCHOLARSHIPS

Valentine Smith Scholarships.—Through the generosity of Hamilton Smith of Durham, the sum of \$10,000 was given in 1898 to establish the Valentine Smith scholarships.

"The income thus accruing shall be given to the graduates of an approved high school or academy who shall, upon examination, be judged to have the most thorough preparation for admission."

These scholarships pay \$100 a year and are good for four years of consecutive attendance at the University, provided satisfactory scholarship is maintained.

Competitive examinations for these scholarships will be held at the University at the time each group of Freshmen enters. Any student who ranked in the upper fifth of his secondary school class is eligible to take these examinations without previous application. Examinations are not restricted to residents of the state. Contestants will be examined in English, American History, Algebra (through Quadratics), Plane Geometry, and either Physics or Chemistry.

Class Memorial Scholarships.—In accordance with a communication presented to the Board of Trustees by the Alumni Association in 1922, each class upon graduation may establish a fund of \$3,000, the interest of which will be used in payment of a class scholarship. The respective classes may forward recommendations to the Student Aid and Scholarship committee, in care of the Alumni Secretary, which will investigate such recommendations before awarding the scholarships.

Scholarships shall be limited to candidates of the highest moral standards and of good health; preference shall be given to those who require financial aid in order to continue their education, and shall be dependent upon the same standards as govern the holding of other scholarships.

Eighteen classes are expected to establish these scholarships, and each scholarship shall be dedicated to the name of one of the eighteen New Hampshire men who died in the service of his country during World War I. Nine classes have established their scholarships to date.

They are: Forrest Eugene Adams Scholarship, Class of 1922; Paul Edward Corriveau Scholarship, Class of 1923; Pitt Sawyer Willand Scholarship, Class of 1924; George Downes Parnell Scholarship, Class of 1925; Cyril Thomas Hunt Scholarship, Class of 1926; Donald Whitney Libbey Scholarship, Class of 1927, and the Libbey family; Frank Booma Scholarship, Class of 1928; Earle Roger Montgomery Scholarship, Class of 1929; and Fred Weare Stone Scholarship, Class of 1930.

Ralph D. Hetzel Interscholastic Debating Scholarships.—The Board of Trustees on December 20, 1926, set aside three scholarships each year (each for three years) to be awarded to the three Interscholastic

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Debaters who may qualify under regulations defined by the Inter-scholastic Debating League or by the University. These scholarships are limited to residents of New Hampshire.

Hunt Scholarship.—A special scholarship paying \$75 has been established by the Trustees at the request of the United States War Department for the benefit of soldiers, or sons and daughters of soldiers on active duty, in the United States Army. This scholarship is named in honor of Colonel William E. Hunt, '99, and Colonel Charles A. Hunt, '01, who rendered conspicuous and gallant service as officers of the regular army before, during, and after World War I. This scholarship will be granted each year and will be good for one year only. The application cannot be approved without satisfactory evidence that the candidate *would be unable to attend without the aid of a scholarship*. Preference will be given to a New Hampshire soldier.

Concord Alumni Scholarship Fund.—The Concord Branch of Alumni of the University of New Hampshire has established a scholarship fund. In accordance with the suggestion of the Concord Branch, money paid in from year to year is employed as a part of the Student Loan Fund of the University. Ultimately, the principal and such interest as accrues will be transferred to a special scholarship fund.

Frank B. Clark Fund.—A trust fund of \$10,000 has been provided by Frank B. Clark of Dover, N. H., the income of which is to be used for the purpose of assisting and encouraging needy and worthy students who are suffering from physical impairment or deformity.

"Students impaired by the loss of an arm shall receive prior consideration.

"The benefits of this gift are to be available to students in any secondary school or college except a secondary school or college which is under the direction or control of a church or religious affiliations or preferences, and with the further understanding that students at the University of New Hampshire shall be given prior consideration."

Dads'-Hetzel Scholarship Fund.—At the second annual Dads' Day at the University, the fathers present voted to establish a scholarship fund to be known at the Dad's-Hetzel Fund and subscribed \$304. For the present this money will be employed as a part of the Student Loan Fund of the University. Ultimately, the principal and such interest as accrues will be transferred to a special scholarship fund.

Edmund L. Brigham Scholarship.—The income of a trust fund of \$4,812 provided by the will of Edmund L. Brigham, a member of the Class of 1876, is divided into two scholarships of equal sums each to be known as the Edmund L. Brigham Scholarship. They will be awarded at the end of each year to the two members of the Freshman Class who under the pressure or necessity of having to earn a portion of their

SCHOLARSHIPS

college expenses show either a constant improvement in scholarship, or a high scholastic average, or both.

New Hampshire Branch of National Civic Federation Scholarship.—From the income of a fund of \$1,100, established in June, 1930, and supplemented in October, 1937, by the New Hampshire Branch of the National Civic Federation, a scholarship is to be awarded annually to the woman majoring in Economics or Business who, upon completion of six semesters' work and, by excellence of scholarship, character, and promise of leadership, is judged to be most worthy. The Dean of the College of Liberal Arts and the two ranking members of the Department of Economics shall name the winner of this scholarship in each year.

S. Morris Locke Memorial Scholarship.—The income of a fund of \$3,000 established by the late Mary D. Carbee of Haverhill, N. H., as a memorial to Mr. and Mrs. S. Morris Locke, shall be known as the S. Morris Locke Memorial Scholarship. This scholarship is to be awarded each year to the student ranking highest upon completion of six, semesters' work who is majoring in Chemistry, Entomology, or in any work where the microscope or microscope technique is largely employed, and who has remonstrated outstanding qualities of application, industry, and initiative in any of these fields of work.

Cogswell Freshman Scholarships.—The Trustees of the Cogswell Benevolent Trust in Manchester have established a scholarship in each of the twenty high schools of the State paying \$125 for the freshman year. In addition, the student winning the scholarship is eligible for a \$75 Tuition Grant from the University. The awards are based on character, financial need, and academic promise. Applications are made to the headmasters of the high schools in which the Scholarships are established: Claremont (Stevens), Conway (Kennett), Franklin, Goffstown, Gorham, Groveton, Henniker, Hillsboro, Lancaster, Lebanon, Lisbon, Littleton, Manchester Central, Manchester West, Milford, Newport (Towle), Penacook, Peterborough, Tilton-Northfield, Woodsville.

Hood Scholarships.—Through the generosity of the Charles H. Hood Dairy Foundation, there are available to qualified students, whose aims are set definitely to promote farming as a life opportunity, four scholarships of \$200 each for students in four-year curriculums in the College of Agriculture and two of \$100 each for students in Applied Farming. These scholarships are awarded to students who maintain high standards of scholastic excellence and strong character and, in case of competition, are assigned in preference to students who intend after graduation to take up work relating to farm milk production. Application should be made to the Dean, College of Agriculture, through the Office of Student Administration.

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Westinghouse Achievement Scholarship.—The Westinghouse Educational Foundation has provided that a Junior in either Electrical or Mechanical Engineering shall be awarded \$500 payable during his Senior Year. The Junior selected shall have demonstrated high academic and personal standards and shall particularly exhibit unusual promise of future accomplishments in the field of engineering. Selection is made by the Executive Committee of the College of Technology based upon nominations from the Departments of Electrical and Mechanical Engineering.

George H. Williams Fund.—The income of the fund of \$9,900 bequeathed to the University by the late George H. Williams of Dover, N. H., shall be used to award scholarships to deserving and meritorious students of Dover. This income shall be divided into four annual scholarships of equal value. These scholarships, awarded for one year only and not renewable, will be granted to men and women students, residents of Dover, for either the Sophomore or Junior Year. Eligibility shall depend upon character, meritorious scholarship, self-help, and evidence of financial need.

The Ordway Fund.—Through the bequest of Martha H. Ordway, of Hampstead, in 1934, the income from \$2000 will be expended each year for the benefit of indigent students from Sandown or Hampstead, if any; otherwise for the benefit of other indigent students attending the University.

Charles H. Sanders Fund.—The income from a bequest of \$3000 from the estate of Charles H. Sanders, Class of 1871, provides a scholarship in memory of the first class to be graduated from N. H. College, in 1871, consisting of William P. Ballard of Concord, Lewis Perkins, of Hampton, and Charles H. Sanders of Penacook. This scholarship will be awarded to a needy student who has completed four semesters' work and who has excelled in scholarship or has shown marked improvement in his scholastic achievement during his first four semesters at the University.

John N. Haines Scholarship.—The income from a fund of \$2,475 bequeathed by John N. Haines of Somersworth will be used to provide a scholarship for a deserving student of the University. Preference will be given to a student whose home is in Somersworth.

Harvey L. Boutwell Scholarship.—The income of a bequest of \$3,000 of the late Harvey L. Boutwell of Malden, Mass., Class of 1882, and member of the Board of Trustees from 1911 to 1929, provides a scholarship for a deserving student who would otherwise find it difficult to obtain a higher education. It will be awarded annually to a Massachusetts student, preference to be given to a resident of Malden, Mass. The determination of the award will be based on character, scholarship, self-help, and evidence of financial need.

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Currier-Fisher Scholarship Fund of New Hampshire's Daughters.—The income of a gift of \$3,500, in 1938, supplemented by additional sums of \$2,520.50 from New Hampshire's Daughters, is to be used for educational purposes by New Hampshire girls attending the University.

Sears, Roebuck Agricultural Foundation Scholarships.—Through the generosity of Sears, Roebuck and Company, and in appreciation of the business received from the rural areas, several scholarships of approximately \$100 each have been available annually, since 1940, to *bona fide* farm boys who have given evidence of scholastic ability and who also need financial assistance to remain in college during the Sophomore year. Applications should be made to the Dean, College of Agriculture through the Office of Student Administration.

Georg Engelhardt Scholarships.—Two scholarships will be awarded annually to the highest ranking man and woman who have completed four semesters' work. The recipients of the scholarships will be chosen by a committee of the Faculty on the basis of need, scholarship, participation in extracurricular activities, leadership, and service as evidenced during the first four semesters of college. These scholarships were established in 1946 by the late President Fred Engelhardt in memory of his father, Georg John Engelhardt, and are valued at \$150 each.

Rosecrans W. Pillsbury Fund.—The income of a gift of Hon. R. W. Pillsbury of Londonderry, in 1903, is to be used to assist worthy students from the town of Londonderry.

Charles H. Wiggin Scholarship.—The income of a bequest of \$11,162.86 of Charles H. Wiggin, Malden, Mass., in 1943, establishes a scholarship fund for the benefit of needy and worthy students.

Winifred E. Chesley Fund.—The income of a bequest of \$4,575 of the late Winifred E. Chesley, of Lee, in 1943, in memory of her father and mother, Irving Glass and Carrie Wiggin Chesley, is to be used to assist needy students from Lee or Newmarket.

Corinne H. Coburn Fund.—The income of a bequest of \$9,652.37 of Corinne H. Coburn of Exeter, in 1943, establishes a scholarship fund for the benefit of worthy students from Exeter.

The James A. Wellman Memorial Scholarship Fund.—The income of a fund of \$25,000, created in 1945 by Mrs. James A. Wellman, Mrs. Dorothy Wellman Burroughs, Helen Vincent Wellman, and Robert P. Burroughs, in memory of James A. Wellman of Manchester, N. H., a Trustee of the University from 1928 to 1944, will provide scholarships for worthy New Hampshire boys, preference being given to promising students from smaller towns or rural sections.

The Joseph L. Fearer Scholarship Fund.—The income from a fund of \$10,000, given by Joseph L. Fearer of the Class of 1931, to provide scholarship assistance to worthy students in the College of Technology.

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The Alfred Ernest Richards Memorial Scholarship.—The income of a fund of \$5,000, given by Mrs. Alfred Ernest Richards as a memorial to her husband, Alfred Ernest Richards, shall be known as "The Alfred Ernest Richards Memorial Scholarship." The scholarship is to be awarded, whenever the circumstances warrant, to a student majoring in English.

White Mountains Region Association Scholarship.—The Trustees of the White Mountains Region Association have established a Freshman Scholarship offered annually to a student graduating from a high school in the region who enters the University of New Hampshire. The award is made on the basis of financial need, academic promise, and an essay on the development of the Region. The scholarship pays \$125 during the student's Freshman Year. In addition, the winner is eligible for a \$75 Tuition Grant from the University. Information is available from the headmasters of the high schools in the region.

The Sylvester M. Foster Fund.—The income of a gift of \$1,000, in 1944, of Sylvester M. Foster of Westport, Conn., of the Class of 1884, to provide assistance to a worthy Freshman.

The Roderick W. Smith Scholarship Fund.—The income from a gift of \$1,000 of Mr. and Mrs. Roderick W. Smith of Cranford, N. J., in memory of their son, Roderick Wheeler Smith, Jr., of the Class of 1945, who died in service in World War II, to be awarded to a worthy Freshman from Cranford or other New Jersey community.

Non-Resident Scholarships.—To encourage attendance of exceptionally able students who are not residents of New Hampshire, the Board of Trustees has authorized a number of \$100 scholarships for such students. They are open to students in any class and may be granted from year to year, if the student's record justifies it. Financial need, as well as ability, will be considered in granting the scholarships. Application must be filed by April 15.

STUDENT LOAN FUND

In order to assist needy students to continue their education, the University has established a Student Loan Fund. After proper investigation and approval by parents, loans may be granted to responsible students for tuition or other college expenses, except that Freshmen holding Tuition Grants may borrow in addition not in excess of \$25. These loans will bear interest at 2 per cent until graduation or withdrawal from the University, and 5 per cent after graduation or withdrawal and are payable as follows: \$5 a month beginning one year after graduation or withdrawal; \$10 a month beginning two years after graduation or withdrawal; \$15 a month beginning three years after graduation or withdrawal; and a like sum each month thereafter until principal and interest are paid.

STUDENT LOAN FUND

The John H. Pearson Loan Fund.—In co-operation with the trustees of the John H. Pearson Trust, Concord, N. H., a student loan fund has been established, and is administered under the conditions governing the student loan funds of the University.

James B. Erskine Loan Fund.—In 1930, a bequest of Dr. James B. Erskine, of Tilton, provided a fund of approximately \$10,000 for loans to students; loans to bear interest at the rate of 5 per cent until paid. This fund will be reserved for members of the Senior Class.

S. Morris Locke Loan Fund.—Through a bequest of the late Mary D. Carbee of Haverhill, N. H., a fund has been created for loan purposes in memory of Mr. and Mrs. S. Morris Locke. The fund now totals approximately \$22,000.

R. C. Bradley Loan Fund.—The New Hampshire Poultry Growers Association has established a loan fund for assistance to undergraduates who have been in attendance at the University at least two years, with preference given to Seniors. Loans are open only to students majoring in Poultry Husbandry in the College of Agriculture and are based on character, scholarship, and need of financial assistance. Applications made to the Committee on Student Aid are approved by that committee with the advice of a committee selected by the directors of the Poultry Growers Association.

Charlotte A. Thompson Loan Fund.—In 1940, a bequest of \$500 provided a fund for loans to students. Miss Thompson was librarian at the Durham Public Library from 1895 to 1907 and was a member of the University Library Staff from 1907 until her retirement in 1929.

OTHER ASSISTANCE

Luella Pettee Fund.—During the year 1939-40, as a memorial to Mrs. Charles H. Pettee, her many friends subscribed to a fund, the income of which is to be used, upon approval of the Dean of Women, to assist directly by small gifts worthy women undergraduates in need of financial assistance. The fund totals \$1,883.

Frederick Smyth Book Fund.—The income of a bequest of \$2,000 in 1901 by Frederick Smyth, of Manchester, is applied to the purchase of books to be given annually to the most meritorious students.

PRIZES*

Bailey Prize.—To endow the prize formerly offered by C. H. Bailey, '79, and E. A. Bailey, '85, a fund is being created by winners of the

*In order to be announced at the Honors Convocation names of recipients of prizes and awards must be in the hands of the Dean of Student Administration on or before April 15.

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prize, the income of which will continue the prize for proficiency in Chemistry.

The Katherine DeMeritt Memorial Prize.—Mrs. John T. Croghan (Margaret DeMeritt, Class of 1911) is the donor of a prize of \$25 in memory of her sister, Katherine DeMeritt, of the Class of 1908, continuing an award made by their mother, the late Dean Elizabeth P. DeMeritt. It is awarded to that Junior girl who, during her three years in college, has shown the greatest aptitude for helpful leadership and cheerful loyalty combined with strength of character and scholastic attainments.

Erskine Mason Memorial Prize.—Mrs. Erskine Mason, of Stanford, Conn., has provided \$100 as a memorial to her son, a member of the Class of 1893, the income of which is to be given to that Senior who is most distinguished for consistent progress and achievement.

Interscholastic Debating Prize.—The University of New Hampshire Debating League was reorganized in 1921. It is under the direction of the Instructor in Debating and Public Speaking in the University. Any secondary school of the state is eligible for membership. Preliminary contests are conducted at the schools, and a final contest is held at the University to determine the winner of the League. A prize cup is awarded in rotation to the winners. Other prizes, such as medals and certificates, are awarded to individual debaters from time to time.

Interscholastic Prize Speaking Contest.—This contest, for students of any accredited high school of the state (provided they have not already won the first prize in a previous year), was first held in May, 1912. Three prizes are provided by the University.

University Inter-Fraternity Scholarship Trophy for Men.—Through the generosity of Wilfred A. Osgood, '14, who has donated trophies for similar purposes in the past, a plaque has been given, and is to be awarded each year to that fraternity whose members have the highest scholastic standing as certified by the University Recorder.

Diettrich Cup.—This cup was given by the Class of 1916 in memory of Rosina Martha Diettrich, a member of that class, who died a few weeks before graduation. The cup is to be awarded each year to the girl who attains the highest scholarship in her Junior Year. The cup is to remain in her possession throughout her Senior Year and until the next winner is named.

The American Legion Award.—The New Hampshire Department of the American Legion, as a mark of recognition of the University's contribution in the World Wars and as an expression of its interest in national defense, offers yearly a medal to that man in the Senior Class who has attained the highest distinction determined by achievement in military science, athletics, and scholarship. The name of the winner will be inscribed on a trophy. This trophy, made possible by the

PRIZES

generosity of the American Legion of this state, is to remain in the permanent possession of the University.

Chi Omega Prize.—Mu Alpha Chapter of Chi Omega awards an annual prize of \$10 to the undergraduate woman student at the University who excels in the work of the Department of Sociology.

Class of 1899 Prize.—The Class of 1899 has given to the University a fund of \$500, the income to be used as a cash prize to be awarded "by the Faculty to the Senior who in their opinion has developed the highest ideals of good citizenship."

Phi Sigma Prize.—In order to promote research in the Biological Sciences the local chapter of the Phi Sigma National Honor Fraternity has given each year since 1921 a prize of \$10 to be awarded annually to that Senior who offers most promise in research in Biology.

Phi Sigma Medal.—In order to promote high scholarship in Biological Sciences, the Phi Sigma National Honor Fraternity offers a medal to be awarded annually to that Senior who ranks highest in Biological courses throughout the entire four years of collegiate work. The amount of work carried in Biology, together with the average grade in all other courses, shall be considered in making this award. It shall in no case be awarded to the recipient of the Phi Sigma Prize. The medal was offered for the first time in 1938.

Hood Prizes.—Through the kindly interest and generosity of Charles H. Hood, of the Class of 1880, the income of funds given to the University in 1921 and in 1924 will be used for the encouragement, aid, and benefit of deserving students.

In accordance with the suggestion of the donor, for the present the income will be expended as follows:

First. *Hood Achievement Prize.*—A suitable medal will be awarded annually to that member of the Senior Class whom the members of the three upper classes choose as giving the greatest promise of becoming a worthy factor in the outside world through his character, scholarship, physical qualifications, personal popularity, leadership, and usefulness as a man among men.

Second. *Hood Dairy Prizes.*—A part of the Hood income will be devoted each year to paying a portion of the expenses of the members of a team or teams chosen for excellence in judging dairy cattle and sent to participate in intercollegiate or other dairy contests. Suitable medals will also be provided for the individual members of such teams.

Third. *Hood Supplementary Bequest.*—The income from this bequest will be used for the purchase of a suitably inscribed trophy to become the property of the University. The names of the winners of prizes in dairy cattle judging are to be inscribed annually upon this trophy,

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which will thus serve as a permanent record to the institution of their skill and accomplishment.

Mask and Dagger Fund.—The income from a gift of \$4,900 from the Mask and Dagger Society, in 1940, will perpetuate the annual prizes offered by the Society for the following purposes:

Mask and Dagger Achievement Prizes, of \$25 each, awarded each year to the three Seniors who, during their college courses, have made the most outstanding artistic contributions to the dramatic work of the University.

Fairchild Memorial Prizes, of \$25 each, in memory of Edward T. Fairchild, a former President of the University, awarded to the three Seniors who have done the most to promote dramatics during their four years at the University.

Albert A. Charait Award.—The income of a trust fund of \$1000 given as a memorial to her husband, who gave his life in World War II, by Mrs. Shirley Evans Charait, will be awarded each year to that undergraduate man who shall write the best short story. The award shall be made by a committee of the English Faculty. In the event that no male undergraduate shall be deemed to have written a worthy story, the award shall be given to the best short story written by an undergraduate woman. Entries must be submitted to the head of the English Department by May 1.

Thomas J. Davis Prize.—By a gift of Thomas J. Davis, Duluth, Minn., a native and former resident of Durham, a fund has been provided for the establishment of dairy science prizes for competitive judging of dairy cattle by "short course students," excluding all four-year students, and allowing a suitable handicap in favor of students who are taking a course of not more than four months.

Locke Prize.—The income of a trust fund of \$3,000 bequeathed by the late Mary D. Carbee of Haverhill, N. H., as a memorial to Mr. and Mrs. S. Morris Locke, will be awarded at the end of each year to that Junior majoring in Latin, who is adjudged by a committee of the Faculty to have excelled in the study of that language. In awarding the prize the committee shall give weight not only to the average grade in Latin, but also to the general record of scholarship, other attainments, and character.

Psi Lambda Award.—Psi Lambda, the Home Economics Club, each year awards a cup or other suitable evidence of achievement to the Home Economics Senior who has shown the greatest improvement in personality and scholarship during her four years in college.

Association of Women Students Award.—The Association of Women Students will award annually \$25 to the woman student who has proved to be of value to the women's student body, and who has

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shown by scholarship, self-help, leadership, and loyalty that she is worthy of this award.

Alpha Zeta Scholarship Cup.—A cup is awarded annually by the Granite chapter of the fraternity by Alpha Zeta to the Sophomore in the College of Agriculture who has made the highest scholastic average during his first three semesters' work. The winner will have his name engraved on the cup which will be on display in the Trophy Room.

General Chemistry Award.—The local chapter of Alpha Chi Sigma, professional Chemistry society, engraves each year on a trophy placed in Charles James Hall, the name of the Freshman who secures the highest average grade in Chemistry.

Phi Lambda Phi Award.—Phi Lambda Phi, Physics Honor Society, will award annually a prize of \$10 to a Senior who is most deserving, as revealed by proficiency in Physics and general scholarship.

The Wellman Trophy.—The Wellman Trophy, given by the late James A. Wellman, of Manchester, a Trustee of the University from 1928 to 1944, to stimulate and promote interest in Debating and Public Speaking, will be awarded annually at the end of his Junior Year to that student who has shown excellence and continued improvement in speech. The element of improvement will be of first importance in judging the winner. The name of the winner will be engraved on the trophy which will be on display in the Trophy Room.

The Pan-Hellenic Scholarship Trophy.—A cup has been given to the University by the University of New Hampshire Chapter of Pan-Hellenic to be awarded each year to the sorority whose members have maintained the highest scholastic standing during the preceding two semesters. This trophy, first awarded in 1933, remains in the possession of the sorority throughout the year and until the next winner is named.

The Mortar Board Scholarship Plaque.—The New Hampshire Chapter of Mortar Board presented to the University, in 1941, a scholarship plaque on which will be engraved each year the name of the woman student of the Freshman Class of the preceding year who attained the highest academic average.

Alpha Xi Delta Plate.—A plate will be awarded annually by the Alpha Xi Delta Sorority to the Senior girl who proves herself to be the best athlete in her class. The plate will be awarded on consideration of the following qualifications: good sportsmanship, physical fitness, athletic achievements, and superior skill. The cup will be awarded by a board of judges including the members of the Department of Physical Education for Women, the President of the Association of Women Students, and the President of the Women's Athletic Association.

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Pi Gamma Mu Medal.—Pi Gamma Mu, National Social Science Society, makes an annual award of its official scholarship medal to that graduating Senior who has the highest academic record in the Social Sciences. A minimum of 40 semester hours of work in the Social Sciences is required for consideration for the award.

Paul Scharager Prize in Photography.—A gift of \$100 from Arthur M. Shrager provides each year a suitable book to be awarded to the student judged to have excelled in photography.

Graduate Science Society Award.—The sum of twenty-five (\$25.00) dollars will be presented to a Graduate Student in the physical or biological sciences for excellence in research for the Master's degree.

Screen Writing Awards.—Two awards to undergraduates to be given each year through 1951 to promote interest in screen writing are provided from a fund donated to the University by Louis de Rochemont, motion picture producer and honorary University alumnus. A first award of \$200 and a second of \$100 will be made annually for stories from the New England scene, past or present, actual or fictional, treated in such manner and with such excellence as to warrant consideration for actual motion picture production.

FOUR-YEAR CURRICULUMS

COLLEGE OF AGRICULTURE

ROBERT F. CHANDLER, JR., *Dean*

HAROLD C. GRINNELL, *Associate Dean*

DEPARTMENTS

AGRICULTURAL AND BIOLOGICAL CHEMISTRY	DAIRY HUSBANDRY
AGRICULTURAL ECONOMICS	ENTOMOLOGY
AGRICULTURAL ENGINEERING	FORESTRY
AGRONOMY	HOME ECONOMICS
ANIMAL HUSBANDRY	HORTICULTURE
BOTANY	POULTRY HUSBANDRY

GENERAL INFORMATION

The object of the Four-Year Curriculum of this College is to give a broad general education and thorough training in the basic sciences as well as to develop specific technical knowledge relating to the various phases of agriculture, forestry, and home economics. To this end several subjects in the Colleges of Liberal Arts and Technology have been added to those provided by the College of Agriculture. The lecture and recitation work of the classroom is supplemented by practical exercises in the laboratories and about the farm. Seminars and discussion courses are provided for advanced students.

Many of the graduates of the Four-Year Curriculum return to the farm for the purpose of putting into practice the knowledge and training gained in their college courses, and many of them have become successful and prosperous citizens of their communities; others, accept salaried positions as superintendents or foremen on large dairy, fruit, stock, or poultry farms; still others take positions as teachers of science and agriculture in our secondary schools, or as assistants in agricultural colleges, experiment stations, or extension services; and, finally, an increasingly large number continue in specialized work, here or elsewhere, as candidates for graduate degrees. There are three vocational programs offered in the Home Economics Department: Hospital Dietetics, Institutional Administration, and Teacher Preparation for Secondary Schools and Extension. The details of curriculums are found on pages 90-94.

When a student enters the College of Agriculture he is placed under the guidance of the Executive Advisory Committee. Previous to registration for the second semester the student will be given an opportunity to select his major field of study.

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When his major field has been selected, not later than at registration for the Sophomore Year, he will be assigned to an adviser (or advisory committee), who will be responsible for approving his program of study until such time as he selects a new major, or until the Executive Advisory Committee changes the adviser.

The major curriculums from which the Agricultural student may make his final choice follow: (Supplementing these, the College of Agriculture will be pleased to arrange courses of study for pre-theological, one-year or two-year pre-veterinary, and other students who desire a specialized program of study).

GENERAL AGRICULTURE	FORESTRY
AGRICULTURAL AND BIOLOGICAL	HORTICULTURE
CHEMISTRY	HOSPITAL DIETETICS
AGRICULTURAL ECONOMICS	INSTITUTIONAL ADMINISTRATION
AGRICULTURAL ENGINEERING	POULTRY HUSBANDRY
AGRONOMY	PRE-VETERINARY
ANIMAL HUSBANDRY	TEACHER PREPARATION
BOTANY	IN AGRICULTURE
DAIRY HUSBANDRY	TEACHER PREPARATION
ENTOMOLOGY	IN HOME ECONOMICS

GENERAL REQUIREMENTS FOR DEGREES*

Each candidate for a degree must complete 136 semester credits, including the courses prescribed by his adviser or advisory committee, in one of the major Four-Year Curriculums.

A student graduating from any of the Four-Year Curriculums may be required by his major department to have sufficient practical experience to enable the department to recommend the student for a position.

No student may graduate from the College of Agriculture without a specific recommendation from his major department.

Not later than the end of the first semester of the Senior Year each candidate for a degree shall be given, under the direction of his major department, a comprehensive examination, a part of which shall be oral, on the four years of college work.

*Effective July 1, 1948, the Department of Home Economics will be re-constituted and assigned to the College of Agriculture. It may be assumed that this transition will cause some alteration in the programs of Home Economics students majoring in either Hospital Dietetics, Institutional Administration, or Teacher Preparation, in order that such programs may conform more nearly to the requirements of the College of Agriculture. For the most part, however, the alterations are potential and not confirmed at the printing of this catalogue issue.

All Home Economics students who matriculated before July, 1948, may be graduated by meeting the requirements of the catalogue in effect at the time of their matriculation. Those entering in July, 1948, or thereafter must complete 136 credits for graduation and meet other requirements of the College of Agriculture approved by the college faculty prior to that time.

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SPECIFIC REQUIREMENTS FOR A DEGREE

During the Freshman Year nearly all agricultural students pursue the same general outline of fundamental course work as listed below:

FRESHMAN YEAR <i>All Curriculums</i>		
	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
Military Science 1-2	1½	1½
Physical Education 31, 32	½	½
Botany 1	4	
Chemistry 1, 2 or 3, 4 (General)	4	4
Elective		3
English 1, 2	3	3
Mathematics (2), (13)	3-5	3-5
*Orientation 1	1	
Zoology 48		3
	17-19	18-20

Students majoring in Botany should take Botany 2 and may defer Zoölogy 48 until the Sophomore Year. Pre-Veterinary students should register for Biology 1-2 instead of Botany 1 and Zoölogy 48. Forestry majors specializing in Game Management will not take Zoölogy 48. Those students who select the professional agricultural engineering curriculum must register for Chemistry 3-4, Mathematics 5-6 and Mechanical Engineering 1-2, and omit Orientation 1 and Zoölogy 48.

SOPHOMORE YEAR <i>All Curriculums</i>		
	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
Military Science, 3-4	1½	1½
Physical Education 33, 34	½	½
Electives	15-18	15-18
	17-20	17-20

ADDITIONAL MINIMUM REQUIREMENTS

In order to complete the requirements for a degree from the College of Agriculture a student must obtain, in addition to the required Freshman work, credit in each of several areas. These minimum requirements covering the four years of study follow:

	<i>Semester Credits</i>
Biological Sciences (Bact., Bot., Zool.)	3
**Chemistry (Agr. Chem., or Chem.)	5
***Economics (Agr. Econ., or Econ.)	6
English	5
Physics	4
Social Sciences (Gov't., Hist., Phil., Psy., Soc., Ed. 41, 42, 52.) ..	6
Total	29

*See page 76 for a description of this course.

**An elective for majors in Agricultural Engineering.

***At least 3 credits must be in Principles of Economics.

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NON-DEPARTMENTAL COURSES

1. *Orientation*.—A non-departmental course having as its objective the consideration of topics not generally available to students in other courses of instruction. Attention will be given Campus regulations, organizations and facilities, and to Federal Aid and the services of Land-Grant institutions, the United States Department of Agriculture, the Bureau of Human Nutrition and Home Economics, and agricultural opportunities. Mr. Grinnell. Required of first-semester Freshmen in Agriculture and Home Economics, 1 lec.; 1 cr.

3. *Principles of Co-operative Extension Work*.—History of development, legal basis, description of projects and operations of field staff, methods of influencing people through meetings, demonstrations, publicity, radio, and visual aids. Mr. Hoitt and other members of the Extension staff. Open to Juniors and Seniors in agriculture and home economics by permission of the instructor. (Given in alternate years; offered in 1948-1949.) 2 lec.; 2 cr.

4. *Supervised Extension Work*. A limited number of general agriculture and home economics Seniors may be permitted to do some supervised Extension work under the immediate direction of a member of the Extension staff. This may be taken during the summer vacation prior to the Senior Year or the second semester of the Senior Year. Mr. Hoitt. Prereq.: Agr. 3. 2 to 6 crs.

CURRICULUMS

GENERAL AGRICULTURE.—This Curriculum is offered for the student who wishes to secure a broad, general training in many important branches of agriculture without specializing unduly in any particular department. A more varied choice of subject matter is advised here than in the more specialized curriculums.

Students who expect to engage in farming will find this so-called General Curriculum, with its wide range of fundamental courses, a most profitable one. This Curriculum also prepares for Extension work like that of a county agent, a boys' and girls' club leader, or a marketing or farm management investigator. For those expecting to specialize later in graduate work, the broad foundation of fundamental subject matter made possible by this Curriculum should provide a desirable background.

AGRICULTURE AND BIOLOGICAL CHEMISTRY.—Students majoring in this Curriculum receive training in the various branches of General Chemistry and in their application to the growth and development of plants and animals. The methods used in the chemical analysis of plants and agricultural products and in the study of animal nutrition and metabolism are given special attention. The Curriculum is designed to provide a thorough foundation for those expecting to

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prepare themselves for teaching and research in colleges and experiment stations, or for technical positions in industries related to agriculture. A Freshman wishing to major in this Department should take Chemistry 3-4 and also Mathematics 5-6 if his high-school preparation is adequate.

As this is a professional and specialized field, entrance to it at the beginning of the Sophomore Year, and continuance in it, are conditioned by a satisfactory record. An early conference with the Head of the Department is imperative.

AGRICULTURAL ECONOMICS.—Students who wish to major in this Curriculum will receive training in analyzing organization and efficiency problems of the individual farm as well as an understanding of the broad economic and social problems of agriculture as an industry. The principles involved in organizing the farm business to maximize the operator's income are studied and applied. The application of economic principles in the analysis of broad problems of production, prices, and the well-being of rural people are considered. Special attention is given to co-operation, farm marketing, agricultural policy, and Federal farm programs.

This Curriculum is designed for those students who wish to fit themselves for service in public and private positions such as extension agents, research analysts, managers of co-operatives, farm managers, or advisers for firms servicing farmers.

AGRICULTURAL ENGINEERING.—The Agricultural Engineering Curriculum offers a basic engineering training, together with the fundamentals of agricultural science, to develop an ability to apply engineering methods to the solution of agricultural problems.

Engineering principles and methods will be offered in the College of Technology, while the application of these to agriculture will be offered in the College of Agriculture.

This Curriculum is intended to meet the demands of young men fitting themselves for professional engineering in connection with its various applications to agriculture.

Students interested in preparing themselves for positions in local commercial organizations serving the farmer in sales, service, and maintenance work should select the General Agriculture Curriculum, where there will be an opportunity for electing many of the Agricultural Engineering service courses.

One summer session will normally be required in order to complete the program in four years.

AGRONOMY.—Courses offered in this field provide a chance for the student to specialize in Soil Science or Field Crops.

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Students who major in Soil Science may find employment in many specialized fields, such as Soil Physics, Soil Chemistry, Soil Microbiology, Soil Fertility, Soil Classification and Mapping, and Soil Technology. Those who wish to specialize in Field Crops will be trained to pursue work in Crop Production, Crop Improvement, Plant Breeding, and related fields. Men with a fundamental training in Soils and Crops are fitted to take Civil Service examinations to enter the Soil Conservation Service or other agencies in the Bureau of Plant Industry, United States Department of Agriculture.

Positions in research and teaching and in Extension work are also available to men trained in soils and crops, particularly if those who desire them pursue further study in agronomic fields. Seed, feed, and fertilizer companies are eager to employ men with a broad training in Agronomy.

A well-equipped soils laboratory is maintained and near-by soil types and profiles are available for study. A great variety of plant material is maintained for use in the crops and seed laboratories and in field nurseries.

ANIMAL HUSBANDRY.—This curriculum is offered to students who wish specialized training in the intelligent and practical selection, breeding, feeding, and management of horses, sheep, swine, and beef and dual-purpose cattle.

It provides basic knowledge and training for managing livestock farms, and prepares students for production and sales work with feed concerns and packing plants. Many graduates enter the field of Extension work as specialists and agricultural agents. The subject matter is basic in preparation for graduate work in Animal Husbandry.

A course in meat and meat products is included. Some cultural subjects are required. Students are permitted to elect subjects in line with their capabilities and inclinations.

The department maintains purebred herds of Milking Shorthorn and Hereford cattle; Chester White swine; flocks of Dorset and Shropshire sheep; Belgian, Percheron, Morgan, thoroughbred and standardbred stallions, and several Percheron mares.

BOTANY.—The field of Botany as a vocation, in general, is open only to those students who are willing to do graduate work leading to the M.S. or Ph.D. degrees. The principle fields of concentration in Botany are: (1) Pathology—the study of plant diseases, their causes and control; (2) Physiology—the study of plant-functioning with such practical applications as plant nutrition and other requirements for plant growth; (3) Taxonomy—plant classification and plant identification; (4) Ecology—which concerns the relationship of

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the plant to its environment; and (5) Morphology and Cytology—the study of the anatomy, development and cellular organization of plants. Histological and cytological techniques including chromosome studies belong here. The undergraduate courses to be taken in all these fields are nearly the same until the Junior and Senior Years. Some specialization should then be made. The student who graduates in Botany may take graduate work in Botany or in the related applied fields of Horticulture, Forestry, and Agronomy which require an extensive background in Botany. Although opportunities for those with advanced training in Botany are not as broad as in certain other fields, assistantships, research positions, and full-time teaching jobs are more available at present than in previous years. Occasional opportunities in government work for able botanists also occur.

DAIRY HUSBANDRY.—Students majoring in Dairy Husbandry are offered specialized courses in (1) Dairy Production and (2) Dairy Manufacturing. Training in Dairy Production prepares students for the operation of modern dairy farms; for positions in Agricultural Extension and Breed Association work; and for field, sales, and technical positions in the Dairy Farm Equipment and Feed Industry and for commercial dairy concerns.

Training in Dairy Manufacturing is particularly well suited to prepare students for executive and administrative positions in creamery and other dairy establishments. It also prepares for plant and laboratory positions in milk and milk-processing plants; and for inspectors of dairy products and dairy establishments in Federal, State, and Municipal service.

Both of these fields offer a broad fundamental training for those intending to pursue graduate study in preparation for more specialized work in dairy and related industries.

The dairy herd on the Campus, together with the daily operations in the market milk pasteurizing and ice cream units at the Dairy Building, contribute to the practical training of students in any one of several lines of the dairy industry.

The Dairy Husbandry Laboratories, located in the Dairy Building and in the Dairy Barn, are well equipped for instructional purposes. The equipment includes power churn, power separator, pasteurizers, coolers, ice cream freezers, bottler, two mechanical refrigeration units, a homogenizer, and a soaker-type bottle washer. The milk testing and bacteriological laboratories are equipped for milk testing and inspecting, and for dairy bacteriological testing.

ENTOMOLOGY.—The Department of Entomology offers various courses for students who wish to specialize in the study of insects, insect life, and in the control of insects. Although the field of employment is lim-

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ited, there are definite opportunities available to those who are qualified. The majority of these opportunities are in the public service, although commercial and industrial firms also employ college graduates who have specialized in this field.

Students desiring a broad fundamental training in Entomology and related fields will follow the program outlined as General Entomology. Those desiring to specialize in chemical control of insects, and who plan to take graduate work leading to a professional degree in that field, will follow a program to be outlined for Insect Toxicology. These students will be expected to take considerable Mathematics and Chemistry.

Students planning a career in Entomology are urged to consult with their adviser regarding the selection of electives best suited to their needs.

FORESTRY.—The training and instructional work in Forestry are intended to meet the needs of four classes of students: (1) those who wish to secure four years' training in Forestry; (2) those who wish to fit themselves for work in Game Management; (3) those who intend to enter the field of Forest Recreation; and (4) those who desire a foundation for professional or graduate work in Forestry. All students take approximately the same program during the first two years, although it is necessary to make certain decisions rather early in the course. Attendance at an eight weeks' session of summer camp is required during the summer following the Sophomore Year, except for the Game Management group who will attend camp at the end of the Junior Year. (See pages 47, 89, and 219.)

GENERAL GROUP.—This group includes those students who wish to secure a broad training in Forestry, but who do not care to spend more than four years in college. Considerable latitude is given in the courses which the student may elect, but his efforts are directed toward securing a broad general training in Forestry.

GAME MANAGEMENT GROUP.—The Game Management Curriculum emphasizes this field while giving the student an adequate training in General Forestry. This combination is essential, as a large part of the country's wildlife program of the future will be handled by men employed primarily as foresters.

FOREST RECREATION GROUP.—This curriculum is designed to prepare the student for positions connected with the management of public parks, camping grounds, etc. Besides attending camp the student is expected to spend one summer employed on a recreation area.

PROFESSIONAL GROUP.—This program of study is designed to fit the student for advanced work at some other institution, where he should

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be able to satisfy the requirements for the degree of Master of Forestry. Students who plan to enter the United States Forest Service, to become teachers, research workers, or consulting foresters, should elect this program of study. The requirements, however, are high, and only the best students will be encouraged to undertake it.

HOME ECONOMICS.—In Home Economics, a student who wishes to take a professional curriculum has three choices: (1) Hospital Dietetics (2) Institutional Administration or (3) Teacher Preparation for Secondary Schools or Extension (Home Demonstration or 4-H Club). Others interested in following the profession of homemaking or in a broad general education particularly applicable to women are advised to major in Home Economics. This curriculum may also serve as pre-professional preparation for further training in child guidance, clothing and textiles, salesmanship, interior decoration and other lines. Miss Verna Moulton, Room 212, Pettee Hall should be consulted for further details. Several elective courses are offered for or are open to students who do not care to major in Home Economics.

HORTICULTURE.—Conditions of climate, soil, and market combine to make New Hampshire a state with great future horticultural possibilities. Accordingly, the Department of Horticulture, with its excellent facilities and staff, offers instruction in three major fields: Pomology (fruit growing), Olericulture (vegetable growing), and Ornamental Horticulture with particular emphasis on Floriculture, Propagation, and Greenhouse Management.

Students who graduate with a major in Horticulture will have received the liberal training expected of a university graduate, a thorough preparation in the fundamental sciences underlying plant production, adequate training in General Horticulture, and, finally, specialization in the field chosen. The courses are designed to acquaint the student with the problems of the improvement, production, and marketing of fruits, vegetables, plants, or flowers. The training is such that superior students can pass the Federal Civil Service Examinations required for entrance into positions with the United States Department of Agriculture or find positions in research, teaching, or state extension. It is usually expected that students will take graduate work if they intend to enter the professional field. New Hampshire graduates have had little difficulty in securing fellowships or scholarships in other colleges and universities.

Major students in the Department must elect a minimum of 11 semester credits in Advanced Horticulture and related courses, in addition to Hort. 2, 13, 91, 92, and 94, required of all majors. A special effort is made to see that outside work during the college year and work done during the vacation periods will provide sufficient

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practical experience before a student graduates, so that he has more than a theoretical knowledge of his profession. The extensive University orchards, gardens, and greenhouses are used as laboratories.

POULTRY HUSBANDRY.—The Curriculum in Poultry Husbandry has been designed to offer students fundamental and special training in the practical and professional fields of Poultry.

The program of study prepares students for various lines of work such as: production, sales, and service with feed and equipment manufacturing concerns; marketing organizations, handling poultry and eggs; commercial hatcheries; poultry-farm managers, as well as for the operation of their own farms. By supplementing his undergraduate work with one or more years of graduate study, superior students will find opportunities in the professional fields of teaching, extension, and research.

Major students are expected to take all courses offered in the Department. In addition, selected courses in other departments of the College are required in support of, and as a supplement to, the instruction given in the Department. However, the student elects these courses under guidance, and considerable latitude is offered. Special attention is given to the interests and ability of each student.

The Department works closely with the poultry industry in the state. This industry ranks high among those in the country. In this connection, frequent and full discussion is given in the classroom to broad problems of the industry.

A brief but comprehensive period of practical work is offered for those who lack sufficient experience in the actual care and production of chicks and laying birds. All of the facilities of the University Plant are available for such students. This Plant is stocked with both chickens and turkeys, and has modern equipment for carrying on its work.

PRE-VETERINARY CURRICULUM.—Students contemplating veterinary medicine as a career should elect the Pre-Veterinary Curriculum. Successful completion of this Curriculum will meet the scholastic requirements for admission to an approved veterinary college. However, all veterinary colleges give first preference for admission to applicants from their respective states. The current number of applications for admission is tremendous. Those few out-of-state students who may be fortunate enough to be admitted will necessarily have shown outstanding scholastic ability.

Although one to two years of Pre-Veterinary training will meet the requirements of most veterinary colleges, it is desirable that a person

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spend four years in Pre-Veterinary work and complete the requirements for the Bachelor's Degree.

TEACHER PREPARATION.—Under the provisions of the Smith-Hughes Act, the University of New Hampshire has been designated as the institution in this state for the preparation of Teachers of Agriculture. Vocational Agriculture offers a fertile field for young men desirous of following the profession of teaching. The work is varied and interesting with opportunities for wide community contacts through the all-day, part-time, and evening school programs.

Agricultural teachers are encouraged to enter upon a program of graduate study as a means of professional growth. Successful completion of such study should result in greater opportunities for advancement in the field of Agricultural Education.

Due to the nature of the duties performed by the teacher of Agriculture it is essential that the student get a good foundation in all the predominating agricultural enterprises of the state. His course of study, therefore, will follow a broad general program rather than a specialization in any one particular field. Furthermore, he must meet the state requirements for certification which include 21 semester hours of professional education, and 8 credits of Agricultural Engineering.

SUGGESTED PROGRAMS

Except for minor variations, the required Freshman program is applicable to all agricultural students who are candidates for a degree. Military Science and Physical Education, which are *general curriculum requirements*, should be completed by the end of the Sophomore Year. "Additional Minimum Requirements" may be satisfied at any time prior to graduation but should be kept in mind when planning a schedule of courses for each semester during the Sophomore, Junior, and Senior Years. Beyond the Freshman program, the General Curriculum Requirements of the University, and the additional minimum requirements of the Agricultural College, a student will select the remainder of his program in consultation with his curriculum supervisor.

The following Curriculums suggest a plan of study applicable to most students, but are not intended as a list of required courses. It is assumed that the program will vary according to the needs of the individual student. It should be remembered that a student must complete an average of 17 credits per semester in order to accumulate a total of 136 credits in four academic years.

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GENERAL AGRICULTURE

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
SOPHOMORE YEAR		
Agron. 1, 4, Soils, Fertilizers and Soil Fertility	4	3
Agron. 10, Crop Production		3
Agr. Chem. 1, Organic and Biological	5	
D. H. 6, Fundamentals of Dairying		3
Econ. 1, Principles	3	
Phys. 1, Introductory	4	
P. H. 2, Farm Poultry		3
JUNIOR YEAR		
Agr. Eng. 5, 6, Basic Applications	2	2
A. H. 11, 2, Judging, Types and Market Classes	1	3
A. H. 13, Feeds and Feeding	3	
D. H. 33, 34, Cattle and Products Judging	1	1
Ent. 41, Insects of Orchard and Garden	3	
Hort. 14, Vegetable Gardening		3
Zool. 49, Genetics	3	
SENIOR YEAR		
Agr. Econ. 14, Farm Management		3
Agron. 20, Forage and Pasture Crops		3
D. H. 64, Milk Production		3
Engl. 35, (23), Public Speaking, Writing Technical Reports	3	2
Hort. 53, Orchard Fruits	3	

AGRICULTURAL AND BIOLOGICAL CHEMISTRY

The following program of study assumes the completion in the Freshman Year of mathematics sufficient to serve as the prerequisite to calculus. Otherwise, additional mathematics would need to be included. Chemistry 3-4 is preferred to Chemistry 1-2 for Freshmen.

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
SOPHOMORE YEAR		
Agron. 1, 4, Soils, Fertilizers and Soil Fertility	4	3
Bact. 1, General Bacteriology	4	
Bact. 2, Food and Sanitary Bacteriology		4
Chem. 21, Semi-micro Qualitative Analysis	4	
Chem. 22, Quantitative Analysis		5
Math. 7-8, Calculus	3	3
JUNIOR YEAR		
Chem. 47-48, Organic Chemistry	5	5
Econ. 1-2, Principles	3	3
Lang. 1-2, French or German	3	3
Phys. 1-2, Introductory Physics	4	4
SENIOR YEAR		
Agr. Chem. 51-52, Physiological Chemistry	5	5
Agr. Chem. 53-54, Agricultural Analysis	4	4
Engl. 35, Public Speaking	3	
Engl. (23), Writing Technical Reports		2

COLLEGE OF AGRICULTURE

AGRICULTURAL ECONOMICS

This Curriculum will be arranged to fit the needs of the individual student. A background in the techniques of agricultural production is recommended.

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
SOPHOMORE YEAR		
Econ. 1-2, Principles	3	3
JUNIOR YEAR		
Agr. Econ. 11, Economics of the Agricultural Industry.	3	
Agr. Econ. 56, Agricultural Marketing		3
Engl. 35, (23) Public Speaking, Writing Technical Reports	3	2
Math. 61-62, Introduction to Statistical Methods	3	3
SENIOR YEAR		
Agr. Econ. 14, Farm Management		3
Agr. Econ. 52, Co-operative Business		3
Agr. Econ. 54, Agricultural Policy		3
Engl. 25, Advanced Composition		3

AGRICULTURAL ENGINEERING

Students interested in advanced work in Agricultural Engineering should take Mathematics 5-6 in the Freshman Year, and Physics 1-2 in the Sophomore Year.

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
FRESHMAN YEAR		
Mil. Sci. 1, 2	1½	1½
P. E. 31, 32	½	½
Bot. 1, General	4	
Chem. 3, 4, General Chemistry	4	4
D. H. 6, Fundamentals		3
Engl. 1, 2, Freshman English	3	3
Math. 5, 6, First Year Mathematics	4	4
M. E. 1, 2, Engineering Drawing	2	2
	19	18
SOPHOMORE YEAR		
Mil. Sci. 3, 4	1½	1½
P. E. 33, 34	½	½
Agr. Eng. 17, 18, Farm Shop	2	2
C. E. 9, Surveying		2
Math. 7, 8, Calculus	3	3
M. E. 3, 4, Machine Drawing, Kinematics	2	3
M. E. 5, 6, Mechanical Laboratory	1	1
Phys. 7, 8, General Physics	4	3
Phys. 9, 10, Physics Laboratory	2	2
	16	18

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	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
JUNIOR YEAR		
Agron. 1, 10, Soils and Crops	4	3
Agr. Eng. 22, Farm Power		2
Agr. Eng. 25, 26, A.S.A.E. (required)		
E. E. 37, 38, Electrical Machinery	4	4
Hort. 2, Plant Propagation		2
M. E. 7, 8, Mechanics	4	4
M. E. 13, Metallurgy	2	
M. E. 23, 24, Thermodynamics	3	3
M. E. 29, Test Laboratory	2	
	19	18
SENIOR YEAR		
Agron. 4, Fertilizers		3
Agron. 60, Conservation		3
Agr. Eng. 23, 24, Machinery and Buildings	2	2
Agr. Eng. 19, 20, A. E. Practice	2	2
Agr. Eng. 27, 28, A.S.A.E. (required)		
Engl. 23, Writing Technical Reports	2	
Engl. 35, Public Speaking	3	
M. E. 17, Heat Treatments	1	
Electives	10	6
	18	18

AGRONOMY

The Agronomy program will vary considerably according to whether or not the student wishes to emphasize soils, crops, or erosion and conservation.

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
SOPHOMORE YEAR		
Agr. Chem. 1, Organic and Biological Chemistry	5	
Agron. 1, Soils	4	
Agron. 4, Fertilizers and Soil Fertility		3
Agron. 10, Crop Production		3
Agr. Eng., 5-6, Basic Applications	2	2
Econ. 1, Principles	3	
Phys. 1, Introductory	4	
JUNIOR YEAR		
Agron. 18, Potatoes and Cereal Crops		3
Agron. 57, Soil Physics	3	
Bact. 1, General Bacteriology	4	
Bot. 51, Plant Pathology	3	
Bot. 40, Plant Physiology		4
Engl. (35), Public Speaking		3
Zool. 49, Genetics	3	
SENIOR YEAR		
Agron. 20, Forage and Pasture Crops		3
Agron. 59, Soil Chemistry	3	
Agron. 60, Soil Conservation		3
Agron. 71-72, Agronomy Seminar	1-3	1-3
Engl. 23, Writing Technical Reports	2	

COLLEGE OF AGRICULTURE

ANIMAL HUSBANDRY

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
SOPHOMORE YEAR		
Agr. Chem. 1, Organic and Biological Chemistry	5	
Agr. Chem. 4, Animal Nutrition		3
Agr. Eng. 5-6, Basic Applications	2	2
Agron. 1, 10, Soils, Crop Production	4	3
Econ. 1-2, Principles	3	3
D. H. 33, 36, Dairy Cattle Judging	1	1
Phys. 1, Introductory	4	
JUNIOR YEAR		
A. H. 11, 14, Livestock Judging	1	1
A. H. 13, Feeds and Feeding	3	
A. H. 15, 16, Systematic Anatomy; Animal Diseases .	3	3
A. H. 18, Meat and its Products; Livestock Markets .		3
Bact. 1, General	4	
Engl. (35), Public Speaking		3
Zool. 49, Genetics	3	
SENIOR YEAR		
A. H. 19, 20, Horses and Beef Cattle, Sheep and Swine	3	3
A. H. 51, 52, Animal Breeding, Seminar	3	1-3
D. H. 23, Dairy Cattle	3	
D. H. 64, Milk Production		3
D. H. 65, Market Milk	3	
Engl. (23), Writing Technical Reports		2

BOTANY

The Botany Curriculum will vary according to the special interest of the student, whether physiology, pathology, taxonomy, morphology or ecology.

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
SOPHOMORE YEAR		
Agr. Chem. 1, 2, Organic, Plant Chemistry	5	3
Bact. 1, General	4	
Bot. 5, 6, Plant Anatomy and Cytology, Systematic . .	2	3
Bot. 40, Plant Physiology		4
Econ. 1, 2, Principles	3	3
Zool. 49, Genetics	3	
JUNIOR YEAR		
Agron. 1, Soils	4	
Bot. 51, 52, Plant Pathology, Plant Disease Control . .	3	3
Engl. 23, (35), Technical Reports, Public Speaking . .	2	3
Ger. 1, 2, Elementary	3	3
Phys. 1, Introductory	4	
SENIOR YEAR		
Bot. 55, Advanced Systematic	4	
Bot. 57, 58, Problems	2-6	2-6

Recommended electives for the Botany Curriculum include: Hort. 2, Plant Propagation; Hort. 91, Plant Breeding; For. 25-26, Tree and Wood Identification.

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DAIRY HUSBANDRY

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
SOPHOMORE YEAR		
Agr. Chem. 1, 4, Organic Animal Nutrition	5	3
Agron. 1, 10, Soils, Crop Production	4	3
A. H. 11, 2, Livestock Judging, Types and Breeds	1	3
D. H. 33-34, Dairy Cattle and Products Judging	1	1
Econ. 1-2, Principles	3	3
JUNIOR YEAR		
Agr. Econ. 7, Farm Accounting	2	
Agr. Eng. 5, 6, Basic Applications	2	2
Agron. 4, Fertilizers and Soil Fertility		3
A. H. 13, Feeds and Feeding	3	
A. H. 15, 16, Anatomy, Animal Diseases	3	3
Bact. 1, General	4	
D. H. 27, 30, Butter and Cheese, Dairy Bacteriology ..	3	4
D. H. 36, Advanced Judging		1
Engl. 35, Public Speaking		3
Zool. 49, Genetics	3	
SENIOR YEAR		
Agr. Econ. 14, Farm Management		3
Agr. Econ. 52, Co-operative Business		3
Agron. 20, Forage and Pasture Crops		3
A. H. 51, Animal Breeding	3	
D. H. 23, 62, Dairy Cattle, Advanced Dairy Science ..	3	2
D. H. 60, Seminar		2
D. H. 65, 64, Market Milk, Milk Production	3	3
D. H. 66, Ice Cream		3
Engl. 23, Writing Technical Reports	2	

For students interested in Dairy Manufacturing, the program of study will permit substitute courses in Business Administration for many of the production courses listed above.

ENTOMOLOGY

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
SOPHOMORE YEAR		
Agr. Chem. 1, 2, Organic, Plant Chemistry	5	3
Econ. 1-2, Principles	3	3
Ent. 41, Insects of Orchard and Garden	3	
Phys. 1, Introductory	4	
Zool. 7-8, General	4	4
JUNIOR YEAR		
Bact. 1, General Bacteriology	4	
Bot. 6, Systematic		3
Engl. (35), Public Speaking		3
Engl. 25-26, Advanced Composition	3	3
Ent. 55, 56, Household Insects, Forest Insects	2	2
Ent. 57-58, Advanced	4	4
Zool. 49, Genetics	3	
Zool. 55, Invertebrate	4	

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SENIOR YEAR

Bot. 51, 40, Plant Pathology, Plant Physiology	3	4
Engl. 23, Writing Technical Reports	2	
Ent. 54, Medical		3
Ent. 59, 60, Advanced Economic	3	3
Lang. 1-2, French or German	3	3

Students interested in Insect Toxicology will follow the same general program of study except that they will complete additional courses in Mathematics and Chemistry selected in consultation with an adviser.

FORESTRY

SOPHOMORE YEAR

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
Agr. Chem. 1, Organic and Biological	5	
Agron. 1, Soils	4	
Bot. 2, General		4
Econ. 1, Principles	3	
Ent. 2, Elementary		3
For. 3, 4, Practice	1	1
For. 28, Mensuration		4
For. 29, 30, Silviculture	3	3
Met. 1, Weather	2	

SUMMER CAMPS

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
For. 42, Summer Camp .....10 crs.		

JUNIOR YEAR

Bot. 51, 40, Plant Pathology, Plant Physiology	3	4
Ent. 56, Forest Insects		2
Engl. 23, (35), Technical Reports, Public Speaking ..	2	2
For. 5, 6, Practice	1	1
For. 33, 26, Protection, Wood Identification	3	3
For. 43, 44, Advanced Mensuration, Economics	3	3
For. 57, Use and Application of Air Photos	4	
Phys. 1, Introductory	4	

SENIOR YEAR

Agr. Econ. 11, Agricultural Industry	3	
For. 7, 8, Practice	1	1
For. 31, 32, Utilization	3	3
For. 37, 34, Recreation, Game Management	3	3
For. 39, 40, Management	4	4

The program suggested for students interested in Game Management will vary somewhat from that suggested for General Forestry as shown above.

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HORTICULTURE

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
SOPHOMORE YEAR		
Agr. Chem. 1, 2, Organic, Plant	5	3
Agron. 1, 4, Soils, Fertilizers	4	3
Econ. 1, Principles	3	
Ent. 41, Insects of Orchard and Garden	3	
Hort. 13, 2, Judging, Propagation	2	2
JUNIOR YEAR		
Bact. 3, Elements of Microbiology	3	
Bot. 51, 40, Plant Pathology, Plant Physiology	3	4
Hort. 94, Plant Breeding		3
Engl. 35, Public Speaking	3	
Zool. 49, Genetics	3	
SENIOR YEAR		
Agr. Econ. 14, Farm Management		3
Engl. 23, Writing Technical Reports	2	
Hort. 91-92, Seminar	1	1

Each student will select 11 additional credits in Horticulture according to his major interests. The following are suggested as desirable electives offered by other departments:

Acctg. 1-2, Elementary	Bot. 6, Systematic
Agr. Eng. 6, Basic Applications	Econ. 6, Principles of Business
Agron. 10, Crop Production	Engl. 9-10, News Writing
Arts 39, Elementary Photography	Geol. 7, General
Bot. 3, Plant World	Met. 1, Weather
Bot. 2, General	

Arts 23, Drawing and Design

HOSPITAL DIETETICS CURRICULUM

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
FRESHMAN YEAR		
P. E. 1, 2 or 31, 32	1	1
Engl. 1-2, Freshman English	3	3
Hist. 1, 2, Introduction to Contemporary Civilization ..	3	3
Biol. 1-2, Man and the Living World	4	4
H. Ec. 15-16, Foods	3	
Agr. 1, Orientation	1	1
Elective		
	17	17
SOPHOMORE YEAR		
P. E. 3, 4	1	1
Chem. 1-2, General Chemistry	4	4
Zool. 17-18, Human Anatomy and Physiology	3	3
Econ. 1-2, Principles of Economics or Sociology 1, 2; Principles of; Sociology; Social Psychology	3	3
Elective from Group I, The Humanities. (See page 138.)		3
H. Ec. 45, Furniture and Textiles	3	
H. Ec.-Ed. 91	3	
	17	17

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*JUNIOR YEAR

P. E. 5, 6	1	1
Agr. Chem. 1, Organic and Biological Chem.	5	
Agr. Chem. 6, Chemistry of Food and Nutrition		3
H. Ec. 25, 26, Child Development	3	3
H. Ec. 74, Dietetics		3
H. Ec. 49-50, Quantity Cookery	3	3
Psych. 1, Elementary General Psychology	3	
Elective		
	<hr/> 17	<hr/> 17

SENIOR YEAR

Agr. Eng. 38, Household Mechanics		3
Bact. 1, General Bacteriology	4	
H. Ec. 41, Institutional Management	3	
H. Ec. 43-44, Institutional Practice	2	2
H. Ec. 45, Furniture and Textiles	3	
H. Ec. (75), Diet Therapy		3
H. Ec.-Ed. 91	3	
Elective		
	<hr/> 17	<hr/> 17

*It is strongly recommended that during the summer between Junior and Senior Years students have some practical experience in hospital work for which they may receive 4-6 credits in *H. Ec. 48*.

INSTITUTIONAL ADMINISTRATION

FRESHMAN YEAR

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
P. E. 1, 2 or 31, 32	1	1
Engl. 1-2, Freshman English	3	3
Hist. 1, 2, Introduction to Contemporary Civilization ..	3	3
Biol. 1-2, Man and the Living World	4	4
Agr. 1, Orientation	1	1
H. Ec. 15-16, Foods	3	3
Elective		
	<hr/> 17	<hr/> 17

SOPHOMORE YEAR

P. E. 3, 4 or 33, 34	1	1
Chem. 1-2, General Chemistry	4	4
Econ. 1-2, Principles of Economics or Soc. 1, 2, Principles of Sociology; Social Psychology	3	3
Elective from Group I, The Humanities (See page 138.)	3	3
Elective		
	<hr/> 17	<hr/> 17

UNIVERSITY OF NEW HAMPSHIRE

*JUNIOR YEAR

P. E. 5, 6	1	1
H. Ec. 34, Consumer Problems		3
Agr. Chem. 1, Organic and Biological Chemistry	5	
Agr. Chem. 6, Chemistry of Food and Nutrition		3
H. Ec. 49-50, Quantity Cookery	3	3
H. Ec. 74, Dietetics	3	3
Psych. 1, Elementary General Psychology	3	
Elective		
	17	17

SENIOR YEAR

Bact. 1, General Bacteriology	4	
H. Ec. (45), Furniture and Textiles		3
Agr. Eng. 38, Household Mechanics		3
H. Ec. 41, Institutional Management	3	
H. Ec. 43-44, Institutional Practice	2	2
H. Ec. (75), Diet Therapy		3
Elective		
	17	17

*It is strongly recommended that during the summer between the Junior and Senior Years, students have some practical experience in institutional work for which they may receive 4-6 credits in *H. Ec. 48*.

POULTRY HUSBANDRY

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
SOPHOMORE YEAR		
Agr. Chem. 1, 4, Organic, Animal Nutrition	5	3
Agron. 1, Soils	4	
Econ. 1, Principles	3	
P. H. 17, 6, Breeds and Judging, Feeding	3	3
P. H. 23, 24, Practice	2	2
JUNIOR YEAR		
Agr. Eco. 11, Agricultural Industry	3	
Bact. 1, General	4	
P. H. 29, 18, Breeding, Incubation and Brooding	2	3
P. H. 26, Management		3
Zool. 49, Genetics		3
SENIOR YEAR		
Engl. 23, (35), Writing Technical Reports, Public Speaking	2	3
P. H. 19, 20, Marketing, Diseases	3	4
P. H. 7, 56, Housing, Turkey Production	2	3
P. H. 27, 28, Seminar	1	1
P. H. 53, 54, Problems	Arr.	Arr.

PRE-VETERINARY

In the Freshman Year, Pre-Veterinary majors will substitute Biology 1-2 for Botany 1 and Zoölogy 48, and will take Chemistry 3-4 as a

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prerequisite for more advanced chemistry in subsequent years. Mathematics 5-6 is preferred but not required. The program of study is so arranged that the student will meet the course requirements of most veterinary colleges at the end of the Sophomore Year.

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
SOPHOMORE YEAR		
Chem. 45, Organic	5	
Phys. 1-2, Introductory	4	4
Soc. 1, 2, Principles, Social Psychology	3	3
Zool. 7-8, General	4	4
JUNIOR YEAR		
A. H. 13, 2, Feeds and Feeding, Types	3	3
A. H. 11, 18, Judging, Meat Products	1	2
Bact. 1, 2, General, Food and Sanitary	4	4
D. H. 64, Milk Production		3
Econ. 1-2, Principles	3	3
Engl. 23, (35), Writing Technical Reports, Public Speaking	2	3
Zool. 49, Genetics	3	
SENIOR YEAR		
A. H. 19, 20, Horses and Beef Cattle, Sheep and Swine	3	3
Bact. 53, 8, Immunology and Sirology, Pathogenic	4	4
Engl. 7-8, Advanced Composition	3	3
Gov't. 1, 2, American Government	3	3

TEACHER PREPARATION IN AGRICULTURE

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
SOPHOMORE YEAR		
Agr. Chem. 1, Organic and Biological	5	
Agr. Eng. 5, 6, Basic Applications	2	2
Agr. Eng. 17, 18, Farm Shop	2	2
Agron. 1, 4, Soils, Fertilizers and Soil Fertility	4	3
D. H. 6, Fundamentals of Dairying		3
Ed. (41), Principles of Educational Psychology		3
Econ. 1, Principles	3	
Phys. 1, Introductory	4	
P. H. 2, Farm Poultry		3
JUNIOR YEAR		
Agr. Econ. 7, 52, Accounting, Co-operative Business ..	3	3
Agr. Eng. 23, Farm Equipment and Machinery	2	
A. H. 13, Feeds and Feeding	3	
Ed. 52, American Secondary Education		3
Engl. 23, Writing Technical Reports	2	
Ed. 92, Agriculture-Education		3
Engl. 35, Public Speaking	3	
Ent. 41, Insects of Orchard and Garden	3	
Hort. 53, 14, Orchard Fruits, Vegetable Gardening ..	3	3
SENIOR YEAR		
Agr. Econ. 14, Farm Management		3
Agron. 20, Forage and Pasture Crops		3
Ed. (45), School Law		2
Ed. 93, Supervised Teaching	13	

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TEACHER PREPARATION IN HOME ECONOMICS

(For Teaching in High School and in Extension Work**)

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
FRESHMAN YEAR		
P. E. 1, 2	1	1
Engl. 1-2, Freshman English	3	3
Hist. 1, 2, Introduction to Contemporary Civilization ..	3	3
H. Ec. 3, 4, Clothing Selection; Textiles	3	3
Agr. 1, Orientation	1	1
Elective		
	17	17
SOPHOMORE YEAR		
P. E. 3, 4	1	1
Chem. 1-2, General Chemistry	4	4
Ed. 41, 42, Principles of Educational Psychology; Edu- cational Psychology of Adolescence	3	3
H. Ec. 5-6, Clothing Construction	2	2
H. Ec. 15-16, Foods	3	3
Agr. Eng. 38, Household Mechanics		3
Elective		
	17	17
JUNIOR YEAR		
P. E. 5, 6	1	1
*Ed. 51, 52, Social Backgrounds of American Secondary Education; Principles of Am. Sec. Ed.	3	3
H. Ec. 25, 26, Child Development	3	3
Agr. Eng. 37, Home Building	3	
H. Ec. 32, Home Furnishing		3
H. Ec. 74, Dietetics		3
*Ed. 61, Principles and Problems of Teaching in Second- ary Schools	4	
‡Agr. 3 (Principles of Cooperative Extension Work)	2	
†Elective		
	17	17

Suggested Elective: †Ed. 45, *N. H. State Program of Studies and School Law*.

†Required of students planning to teach in New Hampshire.

*Not required of students specializing in Extension work. Required of students planning to teach in secondary schools.

**Students planning to engage in Extension work are strongly advised to register for H. Ec. 38, in the summer between the Junior and Senior Years.

‡Required of students who plan to enter Home Economics Extension work.

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SENIOR YEAR	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
H. Ec. 33, Home Management	3	
H. Ec. 35, Home Management House	3	
H. Ec. 83, Home and Family Life	3	
H. Ec.-Ed. 91, Problems in Teaching High School Home Economics	3	
§H. Ec-Ed. 94, Supervised Teaching	(6)	6-12
§H. Ec-Ed. 96, Seminar		3
||Agr. 4 (Supervised Extension Work)	2	
Elective		6
	<hr/> 17	<hr/> 17

§Not required of students who plan to engage in Extension work. Such students with the approval of the Head of Home Economics should elect subject-matter courses to complete semester requirement.

||For students who plan to engage in Extension work.

THE APPLIED FARMING COURSE

A TWO-YEAR, NON-DEGREE CURRICULUM

For one reason or another many young people find it unfeasible to attend the College of Agriculture for four years as a candidate for an academic degree. The Applied Farming Course at the University of New Hampshire offers to such young men and women who are interested in farming and allied occupations the opportunity to secure scientific and practical agricultural training in two years of study. This vocational course is designed particularly for those who wish to become farmers or to seek employment in related activities. Some of the more common types of opportunities available for the two-year student follow:

Farming—owner, renter, operator

Farm manager or estate superintendent

Herdsman or assistant

Milk plant operator or assistant

Poultry plant foreman

Feed and fertilizer store operator or assistant

Greenhouse or landscape work

Skilled worker for nurserymen and seedsmen

Farm machinery worker—sales, service, or operation

Worker in retail agricultural marketing

Milk testers

Caretaker of estate

Superintendent, foreman, or worker in parks

Worker in a commercial dairy manufacturing and distributing plant

Admission Requirements

The Applied Farming Course is open to both young men and young women. Graduates of high schools will be admitted irrespective of

UNIVERSITY OF NEW HAMPSHIRE

age. Applicants who are not high school graduates must be eighteen years of age and must have had at least two years of high-school work or its equivalent. Judgment and understanding will be carefully considered in determining those who will be admitted. A farm background, though not required, will prove exceptionally valuable.

Requirements for Graduation

The Applied Farming Course requires two full years for completion of instruction. It is possible, however, for persons to come for only one, two, or three semesters and yet gain a great deal of first-hand valuable information, even though they do not see their way clear to complete the full course. Upon satisfactory completion of two full years of instruction with a minimum of 60 semester credits, a certificate of graduation will be awarded.

In addition to intensive training on Campus, students are required each year to complete a supervised placement program, adapted to the interests of the individual. This practical experience is under the direct supervision of the Applied Farming Staff.

Major Fields of Instruction

There are four major fields of instruction available: Dairying, General Farming, Horticulture, and Poultry. The student will select the one he wishes to pursue and may elect courses in other fields in order to provide for a well-balanced program.

Facilities for Instruction

Facilities of the University including the University Farm, Dairy Herd, Milk Plant, Poultry Plant, Horticultural Farm, Livestock Department, greenhouses, and laboratories are available for instructional purposes.

Student Aid

Employment is usually available for the student who needs it and is willing to work. Tuition Grants amounting to approximately one half the tuition are available in limited numbers for residents of New Hampshire. These Tuition Grants will be awarded to such applicants as appear on investigation to be needy and deserving. It is hoped that every worthy individual who could not otherwise attend may be helped in this way. However, these funds are by no means inexhaustible and prospective needy students are urged to apply early.

Requests for Information

Persons interested in the Applied Farming Course should write for a complete descriptive catalogue. Such requests should be made to the Applied Farming Course, 112 Morrill Hall, University of New Hampshire, Durham, New Hampshire.

COLLEGE OF LIBERAL ARTS

EDWARD Y. BLEWETT, *Dean*

DEPARTMENTS

ARTS

*Fine Arts, Design, Crafts,
Occupational Therapy, and
Photography*

BACTERIOLOGY

ECONOMICS AND BUSINESS ADMINISTRATION

*Business, Economics, and Sec-
retarial Studies*

EDUCATION

ENGLISH

Speech

GEOLOGY

*Geology, Geography, and Mete-
orology*

GOVERNMENT

Government and Pre-Law

HISTORY

HOTEL ADMINISTRATION

LANGUAGES

*French, German, Greek, Latin,
and Spanish*

MUSIC

PHILOSOPHY

PSYCHOLOGY

SOCIOLOGY

Sociology and Social Service

ZOOLOGY

*Biology, Zoölogy, Nursing, Pre-
Dentistry, and Pre-Medicine*

The Departments of Chemistry, Mathematics, and Physics in the College of Technology, and the Departments of Botany, Entomology, and Home Economics in the College of Agriculture, also offer major programs for students in the College of Liberal Arts.

PURPOSE AND OBJECTIVES

The College of Liberal Arts exists to serve society through meeting the vital educational needs of students on the Campus or in the state. While it prepares some students for scholarly achievement in graduate and professional schools and trains others for immediate gainful service, it develops in all of its students understanding, interests, appreciations, and abilities which make possible the living of a richer and more satisfying life.

It is the purpose of the College of Liberal Arts to help all its students to become better adjusted to the world in which they live, to increase their efficiency as students, to learn how to work and to enjoy work as well as leisure, to solve their college and life problems, and to prepare themselves for intelligent participation in the activities of modern life as socially competent human beings willing to meet their responsibilities to society.

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To accomplish its general educational purpose, the College of Liberal Arts co-operates with its students in their efforts to acquire:

(1) The ability to understand and use language, particularly English, for clear and effective interchange of ideas;

(2) An understanding and appreciation of the principles of the physical and biological sciences as they apply to man;

(3) An understanding of the principles underlying the social, psychological, political, and economic activities of man;

(4) An understanding and appreciation of all peoples and their cultures, both contemporary and historical, for intelligent participation in society;

(5) An understanding and appreciation of literature and the other arts;

(6) An understanding and appreciation of the religious heritage of man and its significance for present-day living;

(7) An understanding of personal and community health;

(8) An understanding of the interrelation of the various fields of knowledge;

(9) A competence in a selected field of knowledge, based on a concentration of studies for vocational or other interests;

(10) Aid in selecting and preparing for a suitable profession or vocation;

(11) A variety of interests outside of the selected field of knowledge, for the purpose of providing avocations or occupations for leisure time in post-college days;

(12) An eagerness for knowledge as a means to continuous self-education;

(13) The ability to seek, discover, and analyze data and therefrom make valid generalizations;

(14) The ability to form unbiased and rational judgments of other individuals and their ideas;

(15) The desire to discover and accept responsibilities, for the improvement of human living;

(16) Principles and convictions about life which may change as experience increases, and upon which their whole conduct shall be founded.

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ORGANIZATION

The development of common interests and the co-ordination of educational efforts in behalf of students in the College are promoted by Divisions as follows: Biological Sciences, Humanities, Physical Sciences, Social Sciences, and Teacher Education. The personnel of each division includes all Faculty members assigned to departments of the College, and to departments of other colleges which are authorized to offer major programs or prescribed curriculums in the College of Liberal Arts.

The Humanities Division is composed of the staffs of the Departments of the Arts, English, Languages, Music, and Philosophy. The Social Sciences Division is composed of the staffs of the Departments of Economics and Business Administration, Government, History, Hotel Administration, Psychology, Sociology, and the Department of Home Economics in the College of Agriculture. The Physical Sciences Division is composed of the staffs of the Department of Geology, and the Departments of Chemistry, Mathematics, and Physics in the College of Technology. The Biological Sciences Division is composed of the staffs of the Departments of Bacteriology and Zoölogy, and the Departments of Botany and Entomology in the College of Agriculture. The Division of Teacher Education consists of the members of the instructional staff of the University who are teaching professional courses in Education. These include courses in the problems of teaching the subjects taught in the public schools and the courses in Physical Education, in the Arts, and in Music, and are designed to prepare teachers and supervisors.

The offerings of the College of Liberal Arts are divided into two groups: the General Liberal Arts Curriculum and the Prescribed Curriculums. The University Teacher Preparation Curriculums are described on pages 129-136.

THE GENERAL LIBERAL ARTS CURRICULUM

The General Liberal Arts Curriculum is intended primarily to give opportunity for a broad, liberal program, a general education leading to the B.A. or B.S. Degree.

A student enrolled in the General Liberal Arts Curriculum will major in some subject or field of knowledge. Some of these major programs offer, at least in part, direct vocational training. The *General Liberal Arts Curriculum* must not be confused with the *Prescribed Curriculums*. The latter are essentially vocational in character.

The objectives, opportunities, and requirements of majors in the General Liberal Arts Curriculum are described in the paragraphs which follow. It is possible, also, for students in the General Liberal

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Arts Curriculum to arrange programs of study in addition to those described below, although such students will be held strictly to the University and College requirements of the General Liberal Arts Curriculum. Students interested in arranging special programs of study should consult the Dean of the College.

The Arts

The courses in this Department are designed to develop intelligent enjoyment and a critical understanding of art, and to provide facilities for creative expression.

Several types of programs may be arranged for individual students. For some who have special creative abilities there are courses in Painting, Sculpture, Ceramics, Crafts, Photography, and Design. For others interested primarily in the application of art to business and industry, there is opportunity for study in Industrial Design, Advertising Art, Photography, Interior Decoration, and Costume Construction and Design. The Department also offers opportunity to all interested particularly in the critical appreciation of art.

Students majoring in other areas in which a knowledge of art is desirable, such as Business, Education, and Hotel Administration, should consider taking one or several courses in the Arts.

Students interested in teaching Art in the secondary schools are advised to consult the Art Education Curriculum (see page 130).

Students majoring in the Arts are expected to meet in full the requirements of the General Liberal Arts Curriculum which are set forth on page 140. They must also earn 24 semester credits, with grades C or better, in courses in the Arts. The following courses are required for Arts majors: Arts 23, or Arts 24, *Elementary Drawing and Design* (does not carry major credit); Arts 31, 32, *Introduction to the Arts*. Courses in Dramatics, Literature, Music, and in the Social Sciences may be approved as related work for a major in the Arts with the consent of the supervisor. The courses of each major program are selected to meet the needs of the individual student, as determined by the student and his supervisor in personal conference. An assigned major work and/or a paper in the student's area of specialization will be required in the Senior Year of students who entered the University after June 30, 1946.

Students interested in majoring in the Arts are advised to consult with the supervisor, Professor G. R. Thomas, Room 209, Hewitt Hall.

Bacteriology

Students interested in the study of bacteria and related micro-organisms should register as majors in Bacteriology. Such students may prepare themselves for positions with state, city, and private hospital

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laboratories or with university, experiment station, public health, and industrial organizations. The program is arranged to meet the needs of two groups of majors; i.e., those who plan to obtain employment as laboratory technicians after receiving the B.S. degree and those who plan to take graduate work in Bacteriology, which is necessary for advancement and preferred employment in the field.

Students who major in Bacteriology are expected to meet in full the requirements of the General Liberal Arts Curriculum which are set forth on page 140. They are expected also to complete courses offered by the Department, and by related departments, to a total of 24 semester credits, with grades of C or better. A course in Organic Chemistry is also required for Bacteriology majors but cannot be counted as part of these 24 major credits. The courses of each major program are selected to meet the needs of the individual student, as determined by the student and his supervisor in personal conference. Since majors in Bacteriology receive a thorough basic training in other Biological Sciences and in Chemistry, they have considerable opportunity to select the field of work they will be particularly interested in after graduation.

Students interested in majoring in Bacteriology are advised to consult with the supervisor, Professor L. W. Slanetz, Room 215, Nesmith Hall.

Biology

Students interested in a broad training in the various life sciences are advised to major in Biology. Such students will find it possible to use courses in Bacteriology, Botany, Entomology, and Zoölogy in building up a program that will fulfill their particular requirements. The field, however, is so inclusive that the majority of students will find it desirable to carry a large part of their work in one of the subdivisions such as Bacteriology, Botany, or Zoölogy. In addition to those students who desire Biology for its cultural background, it is suggested that students interested in *biological laboratory technique, Fish and Game Management, Applied Biology, and secondary school teaching* register as Biology majors.

SECONDARY SCHOOL TEACHING.—Students planning to teach Biology in secondary schools are strongly urged to plan for practice teaching during their Senior Year. Since few positions are available in any year for the teaching of Biology alone, a student should consider a program of study which may qualify him for the teaching of other sciences also.

APPLIED BIOLOGY (FISH AND GAME MANAGEMENT, ETC.)—Students preparing for positions which involve the application of the Science of Biology, such as those frequently listed by the Federal Civil Service and by the State governments, should concentrate in fields of Applied

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Biology. The Department is especially fitted to prepare students for work in fish and game management, conservation education, and work in state departments of conservation. Students preparing for professions in this group should plan to secure advanced degrees since positions in these fields are difficult to secure without post-graduate training.

BIOLOGICAL LABORATORY TECHNIQUE.—In consequence of the increasing number of intricate and lengthy procedures in the biological laboratory, the independent investigator or physician is unable to accomplish much without trained assistants. Those assistants who become specialists in certain phases of laboratory work are known as technicians. The successful technician is not a mere robot or skilled laborer, but must be a person with the background and training which enables him to assume responsibility for accurate analysis. Some of the most famous scientists began their careers as technicians.

After completing his basic training in Biology and Chemistry, the student may find employment in many fields. The technician in a clinic or hospital may make routine urine analysis, blood and bacteriological tests, and prepare sections of tissues. The private physician may employ a technician for both laboratory and office work. Nurses with training in laboratory technique are assured of excellent positions. Biological laboratories and supply houses employ technicians to make slides and other preparations for schools and museums. Many technicians, with a year or two of experience, obtain positions in federal, state, or city public health laboratories. The government is taking more and more interest in public health and recently large sums of money were set aside for work in this field. Scientists in government positions, universities, colleges, and private foundations have technicians prepare slides and carry on many routine experiments. In smaller institutions and in experiment stations, a technician may have other duties such as teaching and maintaining a dispensary. In museums they prepare slides, models, skins, and plant and animal habitat groups. Large drug companies hire technicians to test the effect of chemicals and drugs on animals.

The program to be followed by a student who plans to become a laboratory technician will depend upon his objective—whether preparing to become a laboratory technician in a hospital, or in a public health clinic; a doctor's assistant and secretary; or a technician in connection with some of the private industries.

Students interested in medical laboratory technique are strongly advised to plan to become medical technologists. These are highly trained technicians who have passed a course accepted as adequate by the American Medical Association. This involves an exacting training in-

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cluding Zoölogy 57, *Laboratory Technique*; Zoölogy 53, *Histology*; Chemistry 25, *Quantitative Analysis*; Chemistry 45, *Organic Chemistry*; and Agricultural Chemistry 51-52, *Physiological Chemistry*; Physics 1-2; *Introductory Physics*; Bacteriology 1, *General Bacteriology*; Bacteriology 8, *Pathogenic Bacteriology*; and Bacteriology 53, *Immunology and Serology*. Twelve months' additional training in an approved hospital is required for registration as a medical technologist. Technologists with such training are rapidly replacing the ordinary laboratory technician.

Students interested in becoming medical secretaries or doctors' assistants should follow a program similar to that of laboratory technicians and, in addition, should have two years of typewriting and shorthand.

Students who major in Biology are expected to meet in full the requirements of the General Liberal Arts Curriculum with 24 semester credits of work in Biology (exclusive of Biology 1-2), completed with grades of C or better. Students interested in majoring in Biology are advised to consult with the supervisor, Professor G. M. Moore, Room 101, Nesmith Hall.

Botany

Students interested in plant life are advised to consider registration as majors in Botany. Students majoring in Botany who desire to go into Federal or State Government services, Government or private research or college teaching should prepare to undertake graduate study. Positions in State and Federal work in plant-disease study, crop production, and related economic fields are available. Botany has long been recognized as a basic course in the College of Agriculture, but few people have realized the importance of plants in the environment of every individual regardless of his occupation. Food, fabrics, and fuel are largely derived from plants. It is desirable, therefore, that every person get some understanding of the nature of plants.

Students who major in Botany are expected to meet in full the requirements of the General Liberal Arts Curriculum which are set forth on page 140. They must also complete courses offered by the Department, and by related departments, to a total of 24 semester credits, with grades of C or better. These 24 credits may be earned in elective courses, required courses, or in both. The following courses are required of Botany majors: Botany 1, Botany 2, or Botany 3; Botany 5, *Plant Anatomy and Cytology*; Botany 40, *Plant Physiology*; Botany 51, *Plant Pathology*; Botany 6, *Systematic Botany*; Chemistry 1-2 or 3-4, *General Chemistry*. Of these all but Chemistry 1-2 and 3-4 carry major credit of passed. Other courses in Botany, in addition to those listed, and also Agricultural Chemistry 1, 2; and Zoölogy 49, *Genetics*, may be elected by students for major credit.

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The courses of each major program are selected to meet the needs of the individual student, as determined by the student and his supervisor in personal conference.

Students interested in majoring in Botany are advised to consult with the supervisor, Professor A. R. Hodgdon, Room 218, Nesmith Hall.

Chemistry

Students interested in the study of Chemistry will find opportunities in different fields such as (1) industrial work involving the development of processes or production activities or sales work based on a scientific knowledge of the marketable product; (2) the teaching of Chemistry and allied subjects in secondary schools or of Chemistry in colleges; (3) graduate study for those students who are interested and particularly proficient in their undergraduate work.

The University offers two channels for study of Chemistry; majoring in the subject in the College of Liberal Arts, or enrolling in the Prescribed Curriculum in Chemistry and Chemical Engineering in the College of Technology. In the College of Liberal Arts a major should complete Chemistry 3-4 or 3-6, *General Chemistry*, and Mathematics 11, 13, 14, 16, and in addition other courses offered by the Department in *Analytical, Organic, and Physical Chemistry* to a minimum of 24 semester credits, with grades of C or better. According to the students' interests, other supporting subjects may be elected to form a broad program of study and prepare for some one of the opportunities listed above. Majors in Chemistry are expected to meet in full the requirements of the General Liberal Arts Curriculum, which are set forth on page 140.

The Department is equipped to furnish the training necessary for teaching of Chemistry in the secondary school. Since, however, very few positions are available in any year for the teaching of Chemistry alone, a student should consider a program of study which may qualify him for the teaching of Chemistry and other sciences, and should consult Professor Iddles and Professor T. O. Marshall of the Department of Education. Students interested in the teaching of Chemistry in college are advised to plan on graduate study. Students who plan to major in Chemistry are advised to consult with the supervisor, Professor H. A. Iddles, Room 117, James Hall.

Economics

Students interested in economic and business life, who do not desire to specialize intensively in the Business Curriculum (see page 141), or the Secretarial Curriculum (see page 147), are advised to consider registration as majors in Economics. Students who intend to enter upon graduate study in Economics should plan to major in this

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field as undergraduates. An increasing number of opportunities in business and the public service are open to young people who possess graduate training in Economics.

Business positions in retail stores, chain stores, banks, sales organizations, and general business offices, insurance, and other firms, have been successfully filled by graduates of the University who have majored in Economics. The Business Curriculum provides specific preparation for several of these fields by reason of its specialized requirements. A student who desires breadth in his education, with an emphasis on Economics, is counselled to major in the Department.

The Department is equipped to furnish the training necessary for the teaching of Economics in secondary schools. Since, however, very few positions are available in any year for the teaching of Economics alone, a student should consider a program of study which may qualify him for the teaching of Economics and other social studies, and should consult the supervisor, and Professor T. O. Marshall of the Department of Education.

Students who major in Economics are expected to meet in full the requirements of the General Liberal Arts Curriculum, which are set forth on page 140. They are required to complete successfully Economics 1-2 *Principles of Economics*; and Economics 31, *Economics and Business Statistics*. They are required to complete 24 semester credits of Economics, with grades of C or better. Of these 24 semester credits, 12 credits must be in courses in Economics numbered 51 or higher. Individual programs will be arranged to meet the needs of the individual student. Business Administration, 1-2, 21-22, 68, and 70 may be counted for major credit in Economics. *The major requirements stated above are applicable to students who entered the University after June 30, 1948.*

Students interested in majoring in Economics are advised to consult with the supervisor, Professor C. M. Degler, Room 104, Morrill Hall. Professor Degler may assign the student when the field of his major interest is determined, to another member of the Department who is responsible for the area of concentration selected by the student and who will be his supervisor throughout the duration of his course.

Education

Students who are interested in preparing themselves for teaching in the secondary school and who do not desire to follow any of the University Teacher Preparation Curriculums (pp. 129-136) should consult with Professor T. O. Marshall of the Department of Education, Room 118, Murkland Hall. Under some circumstances it is possible for such students to prepare themselves for teaching as majors in the

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subject-matter departments in which they desire to teach. In other instances, it may be wise for them to do their work as majors in Education.

Majors in Education are divided into three groups: *first*, those students who find themselves academically interested in the subject and who intend to continue their study in graduate school. Such are required to complete 24 semester credits in Education with grades of C or better.

A *second* group who major in Education do so to prepare to teach in secondary schools. They also are required to complete 24 semester credits in Education, with grades of C or better, which must include a minimum of six semester credits in supervised practice teaching and a minimum of 15 semester credits in Education courses other than practice teaching. These students are also required to complete, with an average grade of at least C, (1) a teaching major of at least 24 semester credits of post-secondary school work in a subject-matter department, or in a subject-matter field, and (2) either a second teaching major of at least 18 semester credits, or two teaching minors of 12 semester credits each.

A *third* group of majors in Education are those students who are interested in teaching or in supervising in elementary schools, and who are graduates of two- or three-year Normal Schools or Teachers Colleges. They are required to complete, with grades of C or better, 12 semester credits of work in Elementary Education selected from the advanced courses in that subject offered in the Summer Session as a part of the total credits which are required of them as candidates for the Degree of Bachelor of Arts. The remainder of their major programs will be selected by such students with the advice and approval of the Head of the Department of Education. (See special Language requirements, page 138.)

While some of the courses offered in Education are designed to be of interest to the general student, only those students who have definitely decided to prepare themselves for the teaching profession should seriously consider majoring in the Department of Education. All students, before entering Education 61, are required to take a battery of teacher aptitude examinations.

Professor T. O. Marshall, Room 118, Murkland Hall, is the Supervisor of all majors in Education. Arrangements will be made, however, to enable majors in Education to be advised in particular problems by members of the staff who are best qualified to be of service to them.

English

Majors in English are divided into three groups: *first*, those students who seek a liberal education with the emphasis upon the study of

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English and American Literature; *second*, those who plan, immediately after graduation, to begin their chosen work and desire as a foundation for it a greater knowledge of English and American Literature; and *third*, those who intend to use their undergraduate work in English and American Literature as a preparation for graduate work. Concentration in the field of English and American Literature is of definite value to students in the second group planning to enter library work, radio, publishing, writing, the theater, or teaching in the secondary school; and to those in the third group who contemplate graduate work in law or in journalism. It is, of course, essential for graduate work in the theater or in English or American Literature. For all three groups, study of English and American Literature trains the mind in logic and broadens the understanding and appreciation of the thought of the great minds of the past.

In addition to meeting in full the requirements of the General Liberal Arts Curriculum, which are set forth on page 140 of the Catalogue, *majors in English and American Literature* are required to take without major credit English 25, English 35, or English 43. They must earn grades of C or better in 24 semester credits in courses in English and American Literature numbered above 50. For their major they must elect one semester of work in the *Great Figure* courses; one semester's work in each of two *Century* or *Period* courses; one semester of work in each of two *Advanced American Literature* courses; and one semester of work in *Type* courses. They are required to take for major credit two semesters of *Shakespeare* (which cannot be counted in satisfaction of the requirement of a Great-Figure course). At the end of the Senior Year majors must pass a written examination on English and American Literature. As a preparation for this the Department issues a syllabus of the work to be covered in the examination and offers for Seniors and Graduate Students a survey course, which is optional and does not carry major credit.

To supplement their major programs, majors are advised to take courses in history, particularly in English and American history; the survey of Greek and Roman Literature; the survey of modern European Literature;—and at least one modern language.

Students who are interested in majoring in English and American Literature must consult the supervisor, Professor S. H. Bingham, Room 107, Murkland Hall.

Entomology

The Department of Entomology offers various courses for students who wish to concentrate on the study of insects, insect life, and the control of insects. Although the field of employment is limited, there are definite opportunities available to those qualified. The majority of these opportunities are in the public service, although commercial and

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industrial firms also employ college graduates who have concentrated in Entomology. Graduate study is desirable for the student who seeks high achievement in Entomology. A more intensive program in Entomology may be secured in the Prescribed Curriculum offered in the College of Agriculture.

Students who major in Entomology are expected to meet in full the requirements of the General Liberal Arts Curriculum, which are set forth on page 140. They are expected also to complete successfully courses offered by the Department, and related departments, to a total of 24 semester credits, with grades of C or better. Outlines of specific suggested programs of study are available to the student upon request to Professor J. G. Conklin, supervisor, Room 16, Nesmith Hall.

Geology

The field of Geology includes the earth sciences. This is not alone the study of minerals, rocks, and evidence of prehistoric life. It includes also the history of the earth from its beginning, as well as the evolution of the landscape, and other environmental features which have influenced the development of life on the earth, including man.

Students interested in the earth sciences, both those who expect to make some phase of Geology their life work, and those who desire to build a program of liberal studies around a core of geological and related subjects, are advised to register as majors in Geology.

The search for new sources of essential mineral resources and the development of new uses for certain minerals have emphasized the need for men trained in the earth sciences. Positions as mining geologists, petroleum geologists, mine operators, state survey geologists, and university and college professors of geology and mineralogy have been successfully filled by graduates of the University who have majored in Geology. Other former major students are teaching in high schools or are in business, some in fields where their geologic training is useful, as in the cement and mining-machine industries.

Students who major in Geology are expected to meet in full the requirements of the General Liberal Arts Curriculum, which are set forth on page 140. They are expected also to complete Geology 1-2, *Principles of Geology*, and, in addition, courses in Geology or related courses approved by the supervisor to a total of 24 semester credits with grades of C or better. The courses of each major program are selected to meet the needs of the individual student, as determined by the student and his supervisor in personal conference.

At the end of the Senior Year, a student, who entered the University after June 30, 1948, who majors in Geology, must prepare a satisfactory paper, approved by his supervisor, in his field of concentration.

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Students who are interested in majoring in Geology are advised to consult with the supervisor, Professor T. R. Meyers, Room 205, Conant Hall. After a student's major interest is determined, the advice, assistance, and counsel of one or more additional members of the Department will be sought where a special area of concentration is contemplated by the student. For example, the student whose special interest lies in geographic or meteorologic fields will be assigned to the staff member responsible for these fields.

Government

The courses offered by the Department of Government are designed to aid the student in gaining a knowledge of the nature, functions, and problems of Government, and of the place of Government in the modern world. For this general purpose, courses are offered in public affairs — local, state, national, and international. Some of the courses listed in the Department are chiefly intended to provide information needed for intelligent and responsible citizenship, and to provide a part of a liberal education. Others are of a specialized nature and have been planned to provide basic training for professional work.

By specializing in one of several programs of Government, the major student may prepare himself for: (1) graduate study in Political Science and Government, (2) Public Administration, (3) Research in Government, (4) The Study of Law, (5) graduate study for the Foreign Service, (6) the teaching of Government courses in secondary schools. Students preparing to teach Government courses in the secondary schools should consult with Professor T. O. Marshall of the Department of Education in planning a program of study. Ordinarily, prospective teachers in this field will find it necessary to teach related courses in the social sciences.

For students with a special interest in Public Administration, a limited number of Internships in Public Office (Soc. Sci. 81) have been established, which permit Senior students to obtain firsthand knowledge of public service by working in an office in the State Capitol for a semester for which they receive full college credit. Majors in Government have also an unusual opportunity for mastering research techniques and information concerning the state and local government of New Hampshire in the Bureau of Government Research.

Majors in Government are expected to meet all the requirements of the General Liberal Curriculum found on page 140. All major students are required to take Government 1, *American Government*, and Government 2, *Problems of American Government*. Students who expect to major in Government are advised to register for these courses, the Freshman Year. Students majoring in Government, who entered the University after June 30, 1946, are also required to complete a research paper approved by the staff. This project consti-

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tutes the chief part of the Research Problems course, (Government 65, 66). A major consists of a minimum of 24 semester credits of work with grades of C or better in Government and in any related course which may be approved by the supervisor. (Students registering in the University for the first time after June 30, 1948, will be required to complete Government 1 and 2, and, in addition, a minimum of 24 semester credits with grades of C or better.) Not more than 9 credits earned as an Intern, in Social Science 81, may be counted toward the completion of the major requirements. Each student will be counselled individually and his program of study planned for his needs.

Students interested in electing Government as a major should consult the supervisor, Professor Norman Alexander, Room 212, Morrill Hall.

History

History, as a field in which to major, may be of interest to the following groups of students: (1) Those who wish to do college teaching in History. Graduate study is indispensable for such work, but preparation may be made for it by a certain amount of undergraduate specialization. (2) Those who plan to teach History in secondary schools. For such a position, training in other social studies is highly desirable, if not absolutely necessary. The student is therefore advised to keep in touch with the Department of Education as well as with the Department of History, with a view to satisfying teaching standards and building a well-rounded program of studies. (3) Those who intend to enter other professional fields in which a considerable amount of historical knowledge is desirable. Such a field, for example, might be that of library training, in which an historical training would rank with training in literature as a background, or the increasingly important profession of Archivist. (4) Any students who feel free to plan the college program without too specific reference to a vocation, and who have a special interest in History.

Students who major in History are expected to meet in full the requirements of the General Liberal Arts Curriculum which are set forth on page 140. They must also earn 24 semester credits in courses in History, with grades of C or better, exclusive of History 1, 2. The 24 semester credits with grades of C or better may be earned in elective courses, in required courses, or in both. Philosophy 55, 56, *The Philosophy of History* is a required course for all History majors and may be counted for major credit.

Any department in the College of Liberal Arts may be considered a related department, except Bacteriology, Geology, and Zoölogy.

Students planning to major in History should consult the supervisor, Professor P. M. Marston, Room 209D, Morrill Hall.

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History and Literature

Students who desire a broad cultural education may take a combined major in History and Literature. Students who plan to enter library service may also find here a desirable major. The program of this major offers an opportunity to study the history and literature together of Greece and Rome, of France, of Germany, or of Spain. A still broader survey of European history and literature is also possible. The program involves the completion of 24 semester credits with grades of C or better in one of the following groups of courses, of which 12 credits should be in History and 12 in Language:

- (a) History 11, 12; 13, 14;
Latin 5-6; 7-8; 9-10; 51-52; 55-56
Philosophy 55, 56
- (b) History 9, 10; 19, 20; 63, 64; 83, 84
Spanish 9, 10; 55-56
- (c) History 14; 19, 20; 63, 64; 83, 84; 87, 88
French 5-6, 11-12; 53, 54; 63-64
- (d) History 14; 19, 20; 63, 64; 83, 84; 87, 88
German 11-12; 57-58; 63-64
- (e) 6 credits in either Languages 1, 2 or 51, 52
6 credits in French, German, Latin, or Spanish in courses numbered 7 or higher
12 credits in courses in Groups I or II in the Department of History

A student who has met the major requirements in History and Literature will receive the Degree of B.A. with the notation "History and Literature" on the Commencement Program.

Students' registration cards may be signed by either Professor P. M. Marston, the Head of the Department of History, or Professor C. S. Parker, the Head of the Department of Languages.

Students electing Group (b), (c), or (d) will be expected to do a considerable part of their reading for the courses in History, in Spanish, French, or German, respectively.

Home Economics

For many years it has been recognized that men who would be doctors, lawyers, clergymen, and engineers need specialized education. More recently, it has been conceded that particular preparation should be given to girls who want to be hospital dietitians, food service directors, teachers of Home Economics, designers of clothing, Extension and research workers, and followers of other women's vocations. Still more recently, we have thought that successful home living, of a quality satisfactory to others as well as ourselves, also needs special preparation.

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The Department of Home Economics sponsors for the University both kinds of programs—the professional courses which meet the requirements of the different professions, and the broad general programs with many electives which give a rich foundation for successful personal and family life and good citizenship.

Students interested in preparation for homemaking, or in obtaining a broad, general education, particularly applicable to the needs of women, are advised to consider registration as majors in Home Economics. Such a program would not be as completely professional nor would it qualify the student so thoroughly as would one of the professional curriculums. A broad, general program would serve as pre-professional preparation for further training in child guidance, positions in the clothing and textile fields, salesmanship, interior decoration, and other similar lines. Girls wishing to follow such programs should consult with the supervisor, Miss Verna Moulton, Room 212, Pettee Hall. Several elective courses are offered for, or are open to, students who do not wish to major in Home Economics.

While a good many interesting and worth-while vocations are open to Home Economic majors, there are some fields which demand Prescribed Curriculums. Special programs are arranged to train hospital dietitians (see College of Agriculture, page 90), institution administrators (see page 91), teachers of home economics (see page 94), and Extension workers (see page 94).

Majors in Home Economics are expected to meet in full the requirements of the General Liberal Arts Curriculum which are set forth on page 140. They are expected also to complete 24 semester credits with grades of C or better in courses in Home Economics, exclusive of Home Economics 1, 2 and including Home Economics 3, 4; 15-16; 33 and (35). Related courses in other departments may be counted for major credit with the consent of the supervisor.

Freshmen who expect to take Hospital Dietetics (see College of Agriculture, page 90) or Institutional Administration courses (see page 91) are advised to elect Home Economics 15-16, *Foods*. Those taking the Teacher Preparation Course (see page 94) should elect Home Economics 3, *Clothing Selection*, and 4, *Textiles*.

Languages

A major student in the Department of Languages may have a vocational or cultural objective. Many majors plan to enter secondary school or college teaching. For such students there is no hard and fast curriculum. The arrangement of Language courses is sufficiently flexible to meet the individual's needs. As most language teachers are obliged to teach more than one language, or one language in combination with other subjects, students should not plan to concentrate in a single language and its literature, but to map out a program includ-

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ing two languages (preferably French and Latin), or one language with a number of courses in English or History. Prospective teachers should consult the Head of the Department, Professor C. S. Parker, and Professor T. O. Marshall of the Department of Education. Some departmental majors plan to enter library service. Most library schools require two foreign languages.

Major students who do not plan to teach usually have a cultural objective. Here again the flexibility of the departmental offerings makes it possible to arrange individual programs for individual students. No single course in the Department is required of all majors. Some students find a special appeal in a single foreign literature and wish to explore it thoroughly. Others find that the study of two or three languages and literatures is a broadening and stimulating experience.

For non-majors, the Department offers practical courses which are a valuable aid to careers in foreign service (consular, diplomatic, commercial, military, or naval), journalism (for international news, foreign books, and the like), interpreting, translating, travel agencies, radio announcing, etc. A knowledge of foreign languages is invaluable for the historian, the architect, the musician, the artist, the political and social scientist, and for any citizen interested in foreign affairs. The biologist, chemist, or physicist should always be able to read foreign articles and keep up with research in his field in foreign countries. The exchange of goods and information with South America is increasing. As most graduate schools require a knowledge of one or two foreign languages, all students who may possibly do graduate work in any field should obtain a reading knowledge of French and German. The elementary courses in French, German, and Spanish are planned particularly to help students acquire an ability to read and to speak the respective language; at the same time, through reading and oral work, the student learns something of the history, institutions, customs, and spirit of a foreign country. The study of Latin improves one's English and gives a firm basis for other language study.

For non-majors there are offered three courses which do not require a knowledge of a foreign language. These courses offer respectively a Survey of Greek and Latin Literature (in translations), a Survey of Modern European Literatures, and an Introduction to the Science of Linguistics.

Sophomores and Juniors may pursue a major in Languages; but Seniors must designate French, German, Latin, or Spanish as their particular major. Elementary courses French 1-2, German 1-2, Greek 1-2, Latin 1-2, and Spanish 1-2 cannot be counted toward the fulfillment of a major. Except for this restriction, a student majoring in one language may count approved courses taken in another language. Of the 24 semester credits, completed with grades of C or better, which comprise a student's major, not more than 6 may be earned in such

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closely-related courses in other departments as may be approved by the Supervisor. The special supervisor for majors in Languages and in French is Professor C. S. Parker; for majors in German, Professor J. S. Schoolcraft; for majors in Latin, Professor J. S. Walsh; for majors in Spanish, Professor J. Berzunza. All offices of the Department of Languages are in Murkland Hall.

Attention is called to the combined major in History and Literature, described on page 111.

Mathematics

A limited number of vocational opportunities are available to students who major in Mathematics. Positions requiring a knowledge of statistics are the most numerous in this field. These are found in government agencies, business, life insurance, and in several types of research. Many problems in Education, Economics, Sociology, Psychology, Medicine, Genetics and other fields depend upon Statistics as a tool of investigation. For an introduction to the field, the Department offers Mathematics 41-42, *Introduction to Statistical Methods*. This course requires the prerequisite of one year of college mathematics or its equivalent. Mathematics 43-44, *Statistical Methods* is also an introductory course and should be taken by students who can meet the prerequisites. Many secretarial workers will find it very useful to be familiar with the fundamental principles of Statistics.

The life insurance field offers opportunities to students well trained in the mathematics of finance and insurance. This field also seems to give a good basis for those who wish to do high-grade work in accounting.

Students who wish to prepare to teach Mathematics in the secondary school or in college may well select a major in the Department. Since, however, opportunities to teach only Mathematics in high schools are very limited, the student should prepare for the teaching of other subjects, as well as Mathematics, and should consult Professor H. L. Slobin and Professor T. O. Marshall of the Department of Education. Students who wish to prepare for college teaching of Mathematics should plan on graduate study.

Professor H. L. Slobin, Room 1, Murkland Hall, should be consulted by students interested in majoring in Mathematics.

The student who majors in Mathematics should meet all the requirements of the General Liberal Arts Curriculum found on page 140, and should complete 24 semester credits of work in Mathematics, with grades of C or better, including Mathematics 18, but not including Mathematics 2, 9, 11 and 13. Related courses in other departments may be counted for major credit with the consent of the supervisor.

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Music

The Department of Music offers a major program in the General Liberal Arts Curriculum for students who desire to place an emphasis on Music while pursuing a broad, general program of study. The study of music history, literature, and appreciation gives the student cultural values which should enrich his entire life. Music study tends to increase understanding and appreciation of other fields, including the Fine Arts, Language, and Literature. The instruction offered in the Department of Music sponsors musicality (appreciation and general comprehension of music form), musicianship (musical astuteness and scholarship), ability to perform, and capacity to teach, supplemented by the general culture prescribed by the College of Liberal Arts.

Instrumental instruction and vocal instruction are given in private lessons. Class instruction provides for the pursuit of academic music studies. Student recitals, instrumental and vocal ensembles, Men's Glee Club, Women's Glee Club, the University Chorus, the University Symphony Orchestra, University String Orchestra, University Concert Band and Marching Band afford both laboratory and concert experience.

Students who major in Music are expected to meet in full the requirements of the General Liberal Arts Curriculum, which are set forth on page 140. They must also earn grades of C or better in 24 semester credits in courses in Music.

The Department of Music offers the student three options in concentration leading to the Bachelor of Arts Degree with a major in Music.

- I. A non-specialized option which gives the student a well-rounded, comprehensive knowledge, and appreciation of the art. The following courses are required and recommended: Required, Music 15-16; 33, 34; 41-42; 45, 46; 3 credits in applied music. Recommended, Music 1, 3, 5, 7, 8, 9; Applied Music.
- II. Applied music option which emphasizes training in voice, piano, organ, violin, woodwinds or brass. The following courses are required and recommended: Required, Music 15-16; 41-42; 45, 46; 7 credits in applied music in principal field. A senior recital is also required. Recommended, Music 33, 34, 3, 8, 5, 9, 7, 1.
- III. A theory option stressing musical composition. The following courses are required and recommended: Required, Music 15-16, 51-52, 33, 34, 71-72, 97-98. Recommended, Music 11-12; 45, 46; 1, 3, 5, 7, 8, 9, Applied Music.

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Prospective majors in music are advised to consult with the supervisor, Professor Karl H. Bratton, Room 101, Ballard Hall.

Philosophy

This Department proceeds on the assumption that Philosophy, which has sometimes borne the reproach of being impractical, is in reality very practical and can make its contributions to actual living. It is interested in the diffusion of the philosophic spirit among all students as well as in training specialists in Philosophy. It proceeds on the belief that Philosophy is (1) an attitude, (2) a method, and (3) a body of knowledge which may greatly aid in the development of wisdom.

Students in any of the following groups may find Philosophy of value. (*At present the Department does not offer opportunity for a major.*)

1. Those for whom the greatest intellectual need is to become at home in the whole world of thought through an inclusive investigation of nature and man. Such individuals, equally interested in both the social studies and the humanities, but without a preference for any as a specialty, might find in the breadth and depth of Philosophy the field of partial concentration of greatest value to them.

2. Those whose interest in Philosophy, or in social or humanistic studies, suggests the teaching of Philosophy as a vocation.

3. Those planning to attend theological schools or to specialize in religious education.

Physics

Recent advances in Physics have opened vast new fields, and have afforded glimpses of future developments never before imagined. The scientific method, the method of actively pursuing nature by questions put in the form of controlled experiments, has created a new world of experience. Nature has been questioned in high vacuum, at low temperature, under tremendous pressure, at incredible velocities; and by means of million-volt X-rays, and gigantic cyclotrons. The new knowledge in dozens of fields has proved exceedingly useful.

Because of its subject matter and its age the science of Physics stands on an exceedingly broad foundation. The basic facts of Physics are also the basic facts of other sciences. For those who are not primarily interested in science, the study of Physics is perhaps the most effective way to acquire an understanding of the method of achievement in science. The study of Elementary Physics is an introduction to the methods of scientific reasoning and to the use of symbols in exact quantitative work.

Several opportunities are open to Physics majors:

- (a) Research positions in industrial concerns. An advanced degree in Physics is desirable.

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(b) Civil Service. In addition to the usual work for physicists in Civil Service, the present-day conditions have created a demand for more men and women thoroughly trained in Physics.

(c) College and University positions in teaching and research. Such positions are attained only after considerable graduate study. Good students often obtain graduate assistantships in institutions which afford the advantages of financial support, university teaching, and laboratory experience, and the chance to continue with advanced study.

(d) Laboratory technicians. Biological or psychological laboratories operate and maintain electrical apparatus.

(e) Secondary school teaching.

The Department is prepared to give training in Physics with the aim of fitting students either to take a place in industry, or to undertake graduate study, or to teach in high school. Students who wish to major in Physics are advised to consult with the supervisor, Dr. F. A. Scott, Room 208, DeMeritt Hall. After a student's major interest is determined, the advice and counsel of an additional member of the Department will be sought where a special area of concentration is contemplated by the student.

Students who major in Physics are expected to meet in full the requirements of the General Liberal Arts Curriculum which are described on page 140. They are also expected to complete courses offered by the Department up to 24 semester credits with grades of C or better and are to elect Physics 21-22 as the introductory course in place of Physics 1-2. Since proper training in mathematics is essential to a good understanding of physics, the students must plan to elect in the Freshman Year, if possible, Math. 11, 13, 14, 16 in order to have the necessary prerequisites for Physics 21-22 and the courses that follow in both mathematics and physics.

Psychology

Some students may wish to major in Psychology for the purposes of understanding themselves and others more adequately and of gaining knowledge of scientific methods of studying human behavior. Others may not only have these aims in mind but also may wish to specialize in Psychology to prepare themselves for one of the following vocational objectives: (1) college teaching; (2) personnel work in industry or government; (3) supervision of psychological testing in mental hospitals, juvenile courts, city school systems, child guidance clinics, and the United States Civil Service; (4) counseling and guidance in secondary schools and colleges; (5) clinical practice.

Students who contemplate major work in Psychology as a means of preparing for a vocation should keep in mind the necessity of graduate work. For non-majors, a background of Psychology will be an asset in

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teaching, nursing, social work, business and industrial management, or professions, such as medicine and law, in which human relations are of primary importance.

Students who major in Psychology are expected to meet in full the requirements of the General Liberal Arts Curriculum. They are required to complete 24 semester credits, with grades of C or better, in courses in Psychology and in such major subjects as may be approved by the Supervisor. These credits must include Psychology 2, *Advanced General Psychology*, Psychology 67, *Principles of Measurement*, and Psychology 98, *Seminar*. A comprehensive paper on a subject approved by the supervisor is required of students who entered the University after June 30, 1946 who choose to major in Psychology. This paper will constitute an important part of the work of Psychology 98, *Seminar*. Students who wish to major in Psychology are advised to consult with Professor Herbert A. Carroll, Room 120, Hewitt Hall.

Sociology

Students who plan to make social work their professional interest are advised to follow the Social Service Curriculum (see page 149). Those wishing to acquire a thorough knowledge of contemporary society, what it is, how it came to be so, the fundamental laws operative within it, and the interrelation of the processes, agencies, and institutions, its problems, controls and trends should consider registration as majors in Sociology. It is well recognized that success in any business or profession in our complex society rests as much upon social awareness and understanding as upon technical knowledge and skill.

Students looking toward a career in law, medicine, the ministry, as well as those desiring a sociopsychological background for commercial, industrial, or financial pursuits, would do well to supplement their majors by basic courses in Sociology.

The Department is equipped to provide the necessary training for teachers of Sociology in secondary schools. As such teachers usually have to teach related social studies, students should consult the supervisor, Professor C. W. Coulter and Professor T. O. Marshall of the Department of Education about work supplementary to the major.

Students majoring in Sociology are expected to meet in full the requirements of the General Liberal Arts Curriculum (see page 140). They are expected to take Sociology 1, *Principles of Sociology*, and 2, *Social Psychology*, and, in addition, a minimum of 24 semester credits with grades of C or better in the major field, including Sociology 75, *Methods of Social Research*, or 84, *Methods of Social Progress*, and at least 6 semester credits of advanced work in one or more of the following correlated subjects: Economics, Government, History, Psychology, Home Economics, or Zoölogy, depending upon their vocational interest.

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At the end of the Senior Year students who entered the University after June 30, 1946 who are majors in Sociology must pass a written comprehensive examination. Announcement of the time and place of this examination will be made and a syllabus of the work to be covered will be available at the beginning of the last semester of the Senior Year. Students making a grade of B or better on this examination may be excused from final examinations in courses in the Department.

Students interested in majoring in Sociology are advised to consult the supervisor, Professor C. W. Coulter, Room 203, Morrill Hall.

Zoölogy

Zoölogy is the science of animal life; the study of the structure, functions, development, nomenclature, and classification of the various animal forms. The student in Zoölogy may prepare himself for graduate work in pure science, or in Applied Zoölogy. Fish and Game Management, important in the conservation of our natural resources, is an example of Applied Zoölogy. Several of the branches of Zoölogy, such as Ornithology, Mammalogy, and Ichthyology are important fields in both pure and applied science. Entomology, another branch, ranks as a separate science. As another major subject of study it is treated elsewhere in this Catalogue.

Pre-Dental training parallels very closely the Pre-Medical Curriculum and the student's program should include courses in Comparative Anatomy, Physics, and Organic Chemistry. See page 146.

All students majoring in Zoölogy are expected to meet the requirements of the General Liberal Arts Curriculum, with grades of C or better in 24 semester credits of work in Zoölogy. Related courses in other departments may be counted for major credit with the consent of the supervisor. Biology 1-2, however, may not be counted for major credit.

Students interested in any one of the varied programs available in Zoölogy, are advised to consult with the supervisor, Professor G. M. Moore, Room 101, Nesmith Hall.

OTHER PROGRAMS OF STUDY

Although pursuing his studies in the College of Liberal Arts in one of the major fields just outlined, the student may also prepare himself for some related objective which he may have in mind. Two of these are described below, and there is enough freedom of election to make it possible for the student, in consultation with his supervisor, to arrange others.

Institutional Management

The student who wishes to work in the field of Institutional Management (the care and maintenance of any form of household from the

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individual family dwelling, to the hotel, hospital, sanitarium or other housing of the many) will find in this Catalogue under the offerings of the Departments of Home Economics, Hotel Administration, and Economics and Business Administration a variety of courses fitted to his needs. Such students should consult for further information on this subject Professor Helen F. McLaughlin, Room 209, Pettee Hall, or Professor Raymond R. Starke, Room 207, Hewitt Hall.

Pre-Law

While the bar association and law schools do not prescribe a specific undergraduate curriculum for future lawyers, they do recommend that a student who contemplates entering law school should plan a study program which will develop breadth of view and facility of expression. They also urge him to acquire a background of information concerning the society in which he lives and the forces which have shaped modern institutions.

The courses considered most helpful are those developing oral and written expression; dealing with man's social, economic, and political institutions; providing an understanding of the human mind; and developing the art of thinking. Finally, since the case method of study is used in law schools, courses devoted to the intensive study of the subject matter are considered helpful as an introduction to the materials and the discipline which the student will experience in law school.

Students who plan to enter law school after graduation are advised to counsel with Professor Norman Alexander, Room 212, Morrill Hall, as soon as they have made their decision.

PREScribed CURRICULUMS

Several prescribed programs of study intended to provide training for business or professional life are available to students in the College of Liberal Arts. They are arranged in such manner as to permit considerable intense specialization while conserving the breadth and general culture of the students enrolled in them. They are less broad and general, however, than the General Liberal Arts Curriculum. They are definitely vocational in character. All Prescribed Curriculums lead to the Degree of Bachelor of Science.

Business Curriculum

One curriculum and an option are offered in this field, (1) a curriculum for students who do not desire to specialize in any particular phase of business; (2) an option for those desiring to specialize in accounting. The Business Curriculum provides for general educational training as well as specific training in business subjects. For students wishing to specialize in marketing and distribution, an expanding list of courses in that area is offered. Students may choose electives from

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this group. Many of the graduates of the Business Curriculum are successfully filling responsible positions in accounting, banking, insurance, merchandising, and manufacturing concerns.

The Business Curriculum is planned to emphasize foundation or general courses in the Freshman and Sophomore Years with specialization coming largely in the Junior and Senior Years. The program is outlined on pp. 141-142. Students registered for this Curriculum are held for the requirements expected of students in all Prescribed Curriculums which are set forth on page 139. Students pursuing the General Business Curriculum must obtain grades of C or better in 24 semester credits from the following courses: Business Administration 1-2, 21-22, 23, 24, 34, 68, Econ. 1-2, 3, 24, 31, 51, 53, 56, Eng. 35, and the required electives from Economics and Business Administration.

Students pursuing the Accounting option must obtain grades of C or better in 24 semester credits from the following courses: Business Administration 1-2, 3-4, 7-8, 21-22, 23, 24, 55, 56, 57, 58, 68, Econ. 1-2, 3, 24, 31, 53, 56, Eng. 35.

Students interested in Business are advised to consult the supervisor, Professor A. W. Johnson, Room 302, Morrill Hall.

Hotel Administration Curriculum

Young men and women to whom a career in hotel work makes an appeal are invited to follow this Four-Year Curriculum. Hotel work is no sinecure; hard labor and long hours are the inevitable condition of final success. The details of the Curriculum will make these facts evident.

To do well in hotel work requires on the part of the student real effort, and the eventual acquisition of wide knowledge in an extensive range of subject matter. On the other hand, there are many positions open to hotel graduates, the hotel industry is an expanding one, and the opportunities for proprietorship depend chiefly on the ability and initiative of the individual.

The Four-Year Curriculum is designed to give the student the well-rounded education demanded of the hotel executive, and is not confined strictly to vocational work. The program includes, besides vocational subjects, cultural courses in the Humanities, the Social Sciences, and the Sciences.

The basic work comprises four main divisions: Foods, Engineering, Accounting, and Hotel Management Problems. About three-fifths of the total Curriculum is prescribed by the requirements of the Department in these four groups, together with the University and College requirements, leaving about two-fifths of the time open for electives in allied subjects or others of the student's choice.

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To make certain that the hotel educational program contains some experience under working conditions, each student is required to secure before graduation a minimum of 20 points of hotel practice credit in addition to the scholastic requirements of the Curriculum. This will be gained through work in hotels where supervision will be authorized, regular reports submitted by the student, and the grade of work reported by the employer. Each week of work will constitute one point. Not more than 12 points may be secured for any one type of work performed, nor more than 20 points from a given hotel.

The program is outlined in detail on page 143. Students registered in the Curriculum are held for the requirements expected of students in all Prescribed Curriculums which are set forth on page 139.

Students interested in Hotel Administration are advised to consult the supervisor, Professor R. R. Starke, Room 207, Hewitt Hall.

Nursing Curriculum

Any woman student interested in nursing as a career is encouraged to consider the Nursing Curriculum. It affords opportunity for examinations for registration as a nurse and enables the matriculant, also, to secure a college degree. The breadth of training beyond that usually received in a hospital training school is increasingly in demand, particularly for those who aspire to executive or supervisory positions. The Curriculum prepares for nursing and also permits the student some specialization in other fields related to nursing. (See page 144.)

The student must satisfactorily complete three years of work in residence at the University of New Hampshire, and graduate from a school of nursing approved by the University. The length of the training period will vary with the several schools of nursing.

A student registered in the Curriculum is held for the requirements expected of students in all Prescribed Curriculums which are set forth on page 139. This Curriculum is intended to precede hospital training.

Students interested in selecting the Nursing Curriculum are advised to consult with the supervisor, Professor E. T. Richardson, Room 103, Nesmith Hall.

Occupational Therapy Curriculum

An ally to the medical and nursing profession, Occupational Therapy is a form of medically prescribed treatment using as its medium a wide variety of skills, crafts, and techniques.

Its early adaptation, long before World War I, grew from the knowledge that occupation is nature's best medicine. From its use in the first World War as a morale agent, it has expanded to the point of recognition by the American Medical Association as an important treatment in all types of illnesses.

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The course admits both men and women who can meet entrance requirements.

The successful practice of Occupational Therapy requires not only thorough academic training but also suitable personality combined with judgment, dependability, tact, tolerance, patience, and a will to serve. A high degree of mental and physical health is essential. Occupational Therapy requires physical vitality and emotional stability.

In accordance with the standards of training approved by the American Occupational Therapy Association, all students must be at least twenty-one years of age at time of graduation from college. The maximum age is thirty-five, although exceptions are sometimes made in the cases of well-qualified persons.

The course in Occupational Therapy is designed to satisfy the requirements of the American Medical Association as well as to offer a four-year course leading to the B.S. Degree. This includes the theoretical subjects needed in the medical field as well as a wide range of crafts used in therapy and recreational, educational, and prevocational subjects.

At the completion of the four-year course, the student will spend eight months in clinical practice in affiliated hospitals or services under the direction of a registered Occupational Therapist. When this internship is satisfactorily completed, the student is entitled to a Certificate of Occupational Therapy. The student is then qualified to take examination for registry in the American Occupational Therapy Association. The standard examination is sent out by the Association and administered by the University. A fee of \$10 is required by the Association for each examination.

Eight months of practical experience in hospitals is divided as follows:

- Mental hospital—not less than two months
- Tuberculosis sanatorium—not less than one month
- Children's hospital—not less than one month
- General Hospital—not less than one month
- Orthopedic hospital—not less than one month
- Optional for the remaining two months

The American Medical Association requires a physical examination including a tuberculin test prior to hospital training.

Expenses vary during the period of clinical practice. Room, board, and laundry are given students by some hospitals; meals only in other hospitals; while others offer training only. In all cases, the University must approve living arrangements for student affiliates. Blue jumper uniforms with white blouses and white shoes and stockings are required for hospital training.

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The present demand for qualified therapists is far in excess of the supply.

Students interested in this Curriculum are held for the requirements expected of students in all Prescribed Curriculums which are set forth on page 139. They are advised to consult with the supervisor, Miss Doris F. Wilkins, at the Craft Cottage.

Pre-Medical Curriculum

Young men and women interested in careers as physicians or surgeons should select the Pre-Medical Curriculum. Students who successfully complete this Curriculum will be eligible for admission to class A medical schools. However, owing to the large number of applicants for admission to medical schools, usually only those who stand in the upper third of their class can expect to be admitted.

It is highly desirable that a pre-medical student secure a Bachelor's Degree, although some medical schools do not require it as a condition of admission. The four years of pre-medical work will not only give the student a foundation for his future medical training, but will also give him an opportunity to secure the broad general education he needs. Medical schools recognize this need for general education and recommend that pre-medical students secure only certain basic sciences and devote the rest of their time to non-science areas.

The Curriculum is outlined in detail on page 146. Students registered in it are held for the general requirements of Prescribed Curriculums (see page 139). *Students pursuing the Pre-Medical Curriculum must obtain a grade point average of 2.5 or better for the required courses in Biology, Chemistry, Physics, and Zoölogy.*

Students interested in this Curriculum should consult the supervisor, Professor George M. Moore, Room 101, Nesmith Hall.

Secretarial Curriculum

A large number of college women find pleasant and profitable employment in secretarial positions in private, professional, commercial and industrial offices. Although in most cases the initial appointment is to a subordinate position in an office organization, the breadth of the college education plus the secretarial skills acquired during the college course give opportunity for early assumption of greater responsibility.

Although the Curriculum is essentially vocational, it provides for a rather liberal number of elections with which to secure the general education so essential to success.

Women students interested in other aspects of business are advised to consider the Business Curriculum described on page 141, and those interested in less specialization are counselled to consider a major in Economics in the General Liberal Arts Curriculum as set forth on page 104.

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Women preparing to teach commercial subjects in high school should consult the description of the commercial teacher preparation program which appears on page 131.

The Secretarial Curriculum is outlined in detail on page 147. Students registered in it are held for the general requirements expected of students in all Prescribed Curriculums as set forth on page 139. Secretarial majors must earn grades of C or better in the following courses: Sec. St. 3-4, 9-10, 17; Sec. St. 11, 13, 18 (unless excused in accordance with the statement below); Sec. St. 22, *Advanced Transcription*, Sec. St. 23-24, *Business Writing*, Economics, or Accounting (any Economics or Accounting course, whether listed in the Curriculum or not, will be accepted), 4-11 credits, (a total of 24 semester credits).

Students transferring from collegiate institutions and high school students with previous training in Secretarial subjects are required to take the following courses: Sec. St. 3-4, 9-10, 17; Sec. St. 11, 13, 18 (unless excused). These students may be excused from:

Sec. St. 11 by passing a 40-period certificate test.

Sec. St. 13 by passing a theory and practice test on each of the machines taught.

Sec. St. 18 by giving satisfactory evidence of having done acceptable Secretarial work in a business office for one year. Work done for relatives will not be considered.

Transfers and high school students who have had one year of Gregg shorthand (or the equivalent of one year) in another institution and have earned a grade of 80 or better (where the passing grade is 70) will not be allowed to enroll in Sec. St. 1 for credit; likewise, those students who have had one year of typewriting (or the equivalent) in another institution and have earned a grade of 80 or better (where the passing grade is 70) will not be allowed to enroll in Sec. St. 7 for credit.

Secretarial students who have had Sec. St. 5 in the University of New Hampshire or a similar course in another collegiate institution, or one semester of typewriting in high school or preparatory school will be required to enter Sec. St. 27 instead of Sec. St. 7.

Students interested are advised to consult with the supervisor, Professor Doris Tyrrell, Room 4, Morrill Hall.

**Two-Year Secretarial Curriculum*

The Two-Year Secretarial Curriculum offers high school graduates the opportunity to prepare for positions in which the demand is for mature workers who are equipped with certain technical skills; who have broadened their educational horizon through contact with the academic world; and who have had a degree of office experience.

**No students will be admitted to this Curriculum in 1948-1949.*

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An important feature of the Two-Year program is the plan by which qualified students are able to earn a large part of their expenses and at the same time gain practical experience by working in University offices.

After completing 64 credits of prescribed and elected courses (two years of full-time studying), with a grade point average of at least 2.0, an appropriate certificate will be granted.

Subsequently, a student may qualify for the Bachelor's Degree by meeting the requirements of a chosen major or Prescribed Curriculum. If the Four-Year Secretarial Curriculum is selected, the degree can be earned after two years of additional study.

Students who have not had all of the subjects required for admission to the Four-Year Curriculums but who have excellent records may be considered for admission to the Two-Year Curriculum. Such students will not be allowed to transfer to any other curriculum unless admitted to it by the Committee on Admissions. Students will be admitted under one of the following plans:

Plan A. Students admitted under this plan will work half time in Campus offices, earning \$35 a month, and study half time. Although three years will be required to complete the work for the Certificate, the number of credits earned will represent two years of full-time study. Applicants should have taken two years of Shorthand and Typewriting (or one year of Shorthand and Typewriting and one year of Office Practice) in high school.

Continuance in this plan is contingent upon the student's doing satisfactory work both in class and in part-time employment.

Plan B. Students following this plan will work less than half time and may earn up to \$20 a month. Although between two and three years will be required to complete the work for the Certificate, the number of credits earned will represent two years of full-time study. Applicants should have taken at least one year of Shorthand and Typewriting in high school.

Continuance in this plan is contingent upon the student's doing satisfactory work both in class and in part-time employment.

Plan C. This plan will be followed by students who are not working part time and who complete the requirements for the Certificate in two years.

Candidates for a Certificate in the Two-Year Secretarial Curriculum must complete 64 semester credits with a grade point average of at least 2.0. Under Plans A and B the grade of C or better must be earned in the following courses.

Sec. St. 3-4, 6 cr.; Sec. St. 9-10, 4 cr.; Sec. St. 11, 2 cr. (unless excused from course in accordance with conditions described below); Sec. St.

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13, 2 cr. (unless excused from course in accordance with conditions described below); Sec. St. 19-20, 4 cr.; Business Administration 1-2, Sec. St. 23-24, or Sec. St. 22, 2-4 cr. (a total of 20 semester credits).

Under Plan C, grades of C or better must be earned in the following courses:

Sec. St. 3-4, 6 cr.; Sec. St. 9-10, 4 cr.; Sec. St. 11, 2 cr. (unless excused from course in accordance with conditions described below); Sec. St. 13, 2 cr. (unless excused from course in accordance with conditions described below); Sec. St. 17-18, 6 cr. (unless excused from course in accordance with conditions described below); Business Administration 1-2, Sec. St. 23-24, or Sec. St. 22, 0-5 cr; and if more than 5 credits are needed to complete 20 semester credits, a social science, 3 cr.

Grades of C in the courses listed are based on production tests and represent as nearly as possible the performance of the average stenographer or secretary in the skill in which the testing is done.

Students transferring from collegiate institutions and high school students with previous training in Secretarial subjects are required to take the following courses: Sec. St. 3-4, 9-10, 17; Sec. St. 11, 13, 18 (unless excused, or in Plan A or B). Students may be excused from:

Sec. St. 11, *Filing*, by passing a 40-period certificate test. Sec. St. 13, *Office Machines*, by passing a theory and practice test on each of the machines taught. Sec. St. 18, *Office Practice*, by giving satisfactory evidence of having done acceptable Secretarial work in a business office for one year. Work done for relatives will not be considered.

Transfer students and high school students who have had one year of Gregg shorthand (or the equivalent of one year) in another institution and have earned a grade of 80 or better (where the passing grade is 70) will not be allowed to enroll in Sec. St. 1 for credit; likewise, those students who have had one year of typewriting (or the equivalent) in another institution and have earned a grade of 80 or better (where the passing grade is 70) will not be allowed to enroll in Sec. St. 7 for credit.

Secretarial students who have had Sec. St. 5 in the University of New Hampshire or a similar course in another collegiate institution, or one semester of typewriting in high school or preparatory school, will be required to enter Sec. St. 27 instead of Sec. St. 7.

Students interested are advised to consult with the supervisor, Professor Doris Tyrrell, Room 4, Morrill Hall.

Social Service Curriculum

Social Service includes, among others, the following fields: family case work, child care, child placement, settlement and neighborhood house, institutional work for defectives and dependents, municipal and

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county relief work, probation, correctional school and prison service, Y.M.C.A. and Y.W.C.A. secretarial service, municipal playground direction, child guidance clinics, community chest work, rural community organization.

Students may prepare for Social Work as a career under one of three plans. In every way the most desirable is to take the full four years at the University as a broad preparation for a two-year professional course in a recognized School of Social Work. If the resources necessary for such extended professional training are lacking, it is possible to acquire the fundamental principles and techniques of Social Service by selecting the Social Service Curriculum. To meet the needs of students desiring supervised urban training, three years may be taken at the University, and the fourth at an approved School of Social Work. The requirement of the Senior Year in residence will be waived and the degree awarded by the University on the successful completion of the fourth year in such a school.

The student should not confuse the Social Service Curriculum with the major in Sociology in the General Liberal Arts Curriculum. The Social Service Curriculum is essentially vocational.

The program is outlined in detail on page 149. Students registered in it are held for the general requirements expected of students in all Prescribed Curriculums which are set forth on page 139.

It should be noted that while the field work requirements of Sociology 97, 98 may be completed during the college year in connection with a neighboring social agency (see course description), it is strongly recommended that, where possible students arrange to satisfy the requirement by spending the summer preceding the Senior Year in practical work under the supervision of a settlement, correctional institution, or case work agency in Boston, Pittsburgh, Cleveland, Chicago, or other urban center.

Students interested are advised to consult the supervisor, Professor C. W. Coulter, Room 201, Morrill Hall.

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PREPARATION FOR TEACHING

UNIVERSITY TEACHER PREPARATION CURRICULUMS

The University of New Hampshire has accepted the responsibility of preparing teachers for the secondary schools of New Hampshire and neighboring states. Two types of teacher preparation programs are offered. General Liberal Arts Curriculum students may follow the advisory program of studies entitled the University Teacher Preparation Program. Then there are Prescribed Curriculums preparing teachers in the fields of Agriculture, Art, Home Economics, and Physical Education. On pages 130 through 135 appear descriptions of these programs of study. Students interested in preparing for teaching are urged to become thoroughly familiar with the requirements of all the Teacher Preparation Programs before they make a choice of a particular program. This section of the Catalogue includes descriptions of Teacher Preparation Programs offered by the University, not merely those offered by Departments in the College of Liberal Arts.

COURSES IN PROBLEMS IN THE TEACHING OF HIGH SCHOOL SUBJECTS

The courses in problems in the teaching of high school subjects are listed on page 206 and are open only to students who have completed the course in Principles and Problems of Teaching in the Secondary Schools (Education 61) in addition to the courses in the subject and related subjects designated as prerequisites.* From these courses in Problems in the Teaching of High School Subjects the student planning to complete the University Teacher Preparation Curriculum selects his courses in the fields of his teaching major and teaching minor. To be eligible for Supervised Teaching in a subject the student must complete the course in the problems of teaching that subject with a grade of at least C.

COURSES IN SUPERVISED TEACHING. The work in Supervised Teaching is under the direction of the Coordinator of Student Teaching. Students teach under the general direction of the members of the University Faculty conducting the courses in problems of teaching the various school subjects. Students teach under the immediate direction of selected classroom teachers in high schools approved by the University.

In the Supervised Teaching Courses the student participates in the conduct of class exercises and in the control of the classroom, at first

*Except for Ag-Ed. 92 Home Ec.-Ed. 91 and P. E. 91.

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chiefly as an observer, but gradually entering into teacher responsibilities until complete charge of the classroom is assumed.

This work is required in the University Teacher Preparation Program, but will be open only to students whose applications are approved by the Head of the Department of Education and the Supervisor of Student Teaching in the subject or subjects in which the applicant desires to do supervised teaching. Applications should be filed in the Office of the Department of Education on or before November 15 of the academic year in which the supervised teaching is to be done. *No applications will be considered unless the applicant has completed with a grade of at least C the following courses in Education: 41, 42, 52, 61 and, with an average grade of C or better, at least 18 semester credits in the subject-matter field in which he desires to teach under supervision.*

The applicant must also complete with a grade of at least C a course in the problems of teaching the subject in which he desires to do supervised teaching.

PRESCRIBED CURRICULUMS IN TEACHER PREPARATION

AGRICULTURE TEACHER PREPARATION CURRICULUM. A student electing the Teacher Preparation Curriculum in Agriculture must meet the general and specific requirements for a degree described on pages 74 and 75 and applicable to all students registered in the College of Agriculture. His course of study will follow a broad general program rather than a specialization in any particular field. Furthermore, he must meet the State Requirements for Certification which include one semester of practice teaching, 8 additional credits of courses in Education, and 8 credits of Agricultural Engineering.

There is a rapidly increasing demand for teachers of Agriculture in our secondary schools. Local school boards are beginning to appreciate more fully the value of instruction in agriculture, both for the boys who will engage in agriculture after leaving high school, and as electives to maintain the interest of those young men who may wish to take at the University further education in this basic industry. As a result, there are a good many positions open for the young men who wish to make the teaching of Agriculture a profession.

The first two years of the Teacher Preparation Curriculum in Agriculture are identical with the first two years of other Curriculums in Agriculture. For the Prescribed Program for the Freshman and Sophomore Years, see page 83. For the specialized program of the Junior and Senior Years, see page 84.

ART EDUCATION CURRICULUM. This Curriculum is designed to prepare teachers of Art in the public schools. It offers a carefully balanced specialization in teaching methods, materials, and techniques, and

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conforms to the regulations set down by the New Hampshire State Board of Education for teachers of Art, Drawing, and Design (other than Mechanical Drawing).

Freshmen who plan to enter this Curriculum should elect *Elementary Drawing and Design* (Arts 23, 24) in their first-year program.

Students who wish to prepare themselves to teach other subjects in addition to Art can do so by using their elective hours for this purpose. Such a program should be worked out in consultation with Professor T. O. Marshall, of the Department of Education.

Students registered in the Curriculum are held for the general requirements expected of students in all Prescribed Curriculums which are set forth on page 139.

Interested students should consult the supervisor, Professor George R. Thomas, Room 209, Hewitt Hall.

COMMERCIAL TEACHER PREPARATION PROGRAM. This program is an option in the Secretarial Prescribed Curriculum and is not a prescribed curriculum in itself.

Students preparing to teach commercial subjects in high school should include in their Freshman programs Sec. St. 1-2, and 7-8; in their Sophomore programs Sec. St. 3-4, 9-10, 11, and 13, Business Administration 1-2, English (year's work), and Education 41, 42; in their Junior programs, Sec. St. 17, and 23-24, Economics 1-2, and 3, and Education 51, 52, and 61; in the Summer Session between their Junior and Senior Years Education-Commercial subjects 93, *Recent Problems in the Teaching of Commercial Subjects in the High School*; and in their Senior programs, Sec. St. 18 and Education-Commercial Subjects 94, *Supervised Teaching in Commercial Subjects*. Such students should enroll for 18 semester credits in at least three semesters in order to have the second semester of the Senior Year free for supervised teaching.

Interested students should consult the supervisor, Professor Doris Tyrrell, Room 304, Morrill Hall.

HOME ECONOMICS TEACHER PREPARATION CURRICULUM. The Home Economics Teacher Preparation Curriculum for secondary school teaching and Extension work, presented on page 94, aims to give adequate preparation to prospective teachers in the subject matter of the several phases of the field of Home Economics; to acquaint them with educational procedures and modern methods of teaching, as well as to give a general education. The program is professional in character.

The Teacher Preparation Curriculum provides for courses in general as well as special methods. Students spend the first part of the second semester of the Senior Year in Supervised Teaching in approved high

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schools. The last three to four weeks of the semester are spent on the Campus in an intensive seminar where deficiencies revealed during the practice teaching period may be translated into assets. Graduate study is necessary for students who plan to be teachers of Home Economics in colleges and universities.

Women students interested in entering Extension work, either as home demonstration agents or as boys' and girls' club agents in the 4-H Club program, are advised to follow the Teacher Preparation Program. An opportunity is offered to such students to obtain some practical experience in Extension work through Home Economics 48, *Field Work in Institutional Practice and Extension*, during the summer between the Junior and Senior Years. A limited number of opportunities to do practice Extension work during the latter part of the Senior Year is available to women students who have shown special aptitude in previous field experience in Extension work.

The Curriculum is outlined in detail on page 94.

Students who are interested should consult the supervisor, Professor Helen F. McLaughlin, Room 209, Pettee Hall.

MUSIC EDUCATION CURRICULUM. This Curriculum is designed to prepare teachers of music for the public schools. It is based on the new demands for teachers possessing sound musicianship and a broad general culture in addition to a specialized training in Music Education. The satisfactory completion of this Curriculum will satisfy the initial certificate requirements for teachers of music in the public schools in New Hampshire and in most other states.

To be admitted to this Curriculum the student must give evidence of having a sound musical background. Freshmen who plan to enter this Curriculum are advised to elect Music 11-12; 2 hours of Applied Music; and one hour in a music organization in their first-year programs.

A grade of C or better must be made in the following courses: Music-Education 91, 92, 95, 96, 97; and Music 15-16, 41-42, 97-98.

Public school music teachers must maintain a satisfactory standing musically with other professional musicians in the community and should be able to play or sing acceptably. For this reason 16 semester credits in applied music are required before graduation: eight semester credits in one field and eight semester credits divided among other fields of applied music. In addition all candidates must pass an examination in piano and voice which will demonstrate ability to perform acceptably:

Piano

1. Four-octave major and minor scales

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2. Four of the two and three-part Bach Inventions (not from memory)
3. Play from memory any piece of moderate difficulty
4. Read from sight simple accompaniments and four-part harmony

Voice

1. Sing from memory two songs of moderate difficulty (In English)
2. Sing from sight a simple song acceptably

Recitals. Students enrolled in the Music-Education Curriculum must accumulate a minimum of 24 points in the Sophomore, Junior, and Senior Years. Attendance at each concert or recital constitutes one point.

The Curriculum is outlined in detail on page 151.

Students who are interested should consult Professor Karl H. Bratton, Room 101, Ballard Hall.

THE PHYSICAL EDUCATION TEACHER PREPARATION CURRICULUM FOR MEN. For men students who plan to prepare themselves for positions as teachers of Physical Education or Directors of Physical Education, the University has organized the Physical Education Teacher Preparation Curriculum for Men (see page 153). This Curriculum is a modification of the University Teacher Preparation Program which will enable men to prepare themselves to teach in two subject-matter fields as well as in Physical Education. It is open to men who have satisfactorily completed the Freshman Year, and are approved by the Department of Physical Education for admission to Physical Education as a field of concentration. All students enrolled in this Curriculum must in their Freshman and Sophomore Years pass skill tests in at least four of the individual and two of the team activities offered in the required two-year program.

This curriculum requires the satisfactory completion of a second teaching major of 24 semester credits and a teaching minor of 12 semester credits in subjects taught in high schools. Students interested in this program should consult with Professor Carl Lundholm, Room 5A, Field House.

THE PHYSICAL EDUCATION TEACHER PREPARATION CURRICULUM FOR WOMEN. For women students who plan to prepare themselves for positions as teachers of Physical Education or for positions in Recreation, the University has organized the Physical Education Teacher Preparation Curriculum for Women. (See page 154.) This Curriculum is a modification of the University Teacher Preparation Program which will enable women to elect, at the end of the Sophomore Year, the Physical Education Option or the Recreation Option.

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Furthermore, students have the opportunity, if they so desire, to prepare themselves to teach in a subject-matter field as well as in Physical Education. Finally, those interested in going into Physical Therapy after leaving the University, may, by petition, make approved substitutions in the program. The curriculum is open to women who have satisfactorily completed the Freshman Year and are approved by the Department of Physical Education for Women for admission to that field of concentration. It provides an opportunity to teach Physical Education under supervision in near-by schools and recreation centers.

Physical Education students who are planning to teach in areas in addition to Physical Education are required to complete satisfactorily a second teaching major of 18 semester credits in subjects taught in high schools.

For students choosing the Physical Education Option, the following courses offered by other departments are suggested as valuable electives: English 35, *Public Speaking*; Psychology 51, *Psychology of Childhood*; Psychology 47, *Mental Hygiene*; Music 33, 34, *Appreciation of Music*; Sociology 1, 2, *Principles and Social Psychology*; Sociology 37, *Urban and Rural Sociology*; Sociology 42, *Community Organization*; Physical Education 24, *Organized Camping* is also recommended. Physical Education students are advised to choose non-professional electives whenever possible.

Students choosing the Recreation Option are advised to take an additional semester's work beyond that required in the Curriculum in at least two of the following: art, drama, music, or physical education. The following courses offered by other departments are suggested as valuable electives for recreation specialists: Arts; Botany 6; Music; English 35, *Public Speaking*; Forestry 37, *Forest Recreation*; Government 1 or 2; Home Economics 83, *Home & Family Life*; Psychology 1, *Elementary General Psychology*; Psychology 47, *Mental Hygiene*; Sociology 33, *Cultural Anthropology and Ethnology*.

Under Physical Education 1, 11, 2, 12, 3, 4, 5, 6, Physical Education students are required to include certain activities. During the Freshman Year, the student must register for one quarter each of the following in the order listed: hockey, tennis, basketball, modern dance (elementary); hockey, skating, elective, and lacrosse; in the Junior Year, soccer, or speedball, badminton, stunts and tumbling, and golf. For those quite highly skilled in the above mentioned activities, substitutions may be made with the approval of the supervisor. Further dance and other activities not listed above are included in courses for majors in the prescribed curriculum.

Students following any Teacher Preparation Curriculum in the University are urged to include for Physical Education American country

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dancing, folk dancing, community games, hockey, basketball, and softball.

For information concerning this Curriculum see Professor Marion Beckwith, 101A, New Hampshire Hall.

GUIDANCE OF STUDENTS PREPARING TO TEACH. Students who come to the University of New Hampshire for the purpose of preparing themselves for the teaching profession should consult with the Head of the Department of Education early in their Freshman Year. Other students who are seriously considering teaching as a possible vocation are urged to consult with the Head of the Department of Education before making a decision.

While the University has organized curriculums designed to prepare students for the profession of teaching, it also recognizes that it is important that students be prepared to meet the teacher certification requirements of the states in which they may desire to teach. The Department of Education endeavors to keep its files of teacher certification requirements up to date. Students preparing to teach in states other than New Hampshire should, before the close of their Sophomore Year, consult the Department of Education concerning the requirements of the states in which they desire to teach and the most effective ways of meeting those requirements.

THE UNIVERSITY TEACHER PREPARATION PROGRAM*

The University Teacher Preparation Program presented on page 156 includes the basic courses which it is believed are needed in the preparation of secondary school teachers. These courses are designed to give thorough preparation in subject-matter fields in which the individual desires to teach. The courses in Education aim to develop an appreciative understanding of adolescents and their educational needs, of our democratic society and its needs which our secondary schools should endeavor to meet, of the objectives and techniques of secondary school teaching, and of the problems of teaching peculiar to the subject-matter fields in which the student intends to teach. The program also includes a semester of supervised teaching designed to give prospective teachers opportunity to teach under as nearly normal conditions as can be arranged.

It is important to note that the University Teacher Preparation Program may be completed not only by students majoring in the Department of Education, but also by students majoring in any of the Departments of the University offering work, the subject matter of which is offered in secondary schools. General Liberal Arts Curriculum students registered in and completing this program may be released

*This is *not* a Prescribed Curriculum.

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from the Sophomore Group Requirements of the General Liberal Arts Curriculum (see page 140). All other requirements of the General Liberal Arts Curriculum, including the Language requirement, must be met. Students satisfactorily completing this program are entitled to the degree awarded to students majoring in their respective subjects and also to a Certificate indicating that the University Teacher Preparation Program has been completed*.

This program is sufficiently flexible to provide the differentiation necessary to meet the needs of students who may be planning to teach: (1) English and the Foreign Languages, (2) English and the Social Studies, (3) Mathematics and the Biological or Physical Sciences, or (4) the Commercial Subjects.

REQUIREMENTS FOR DEGREES IN THE COLLEGE OF LIBERAL ARTS

The Degree of Bachelor of Science is conferred upon those students in the College of Liberal Arts who successfully complete the requirements of the Prescribed Curriculums and upon those who successfully complete the requirements of the General Liberal Arts Curriculum with majors in the biological or physical sciences. The Degree of Bachelor of Arts is conferred upon all other students in the College of Liberal Arts who successfully complete degree requirements.

A student's candidacy for a degree will be determined by his satisfaction of the university, college, major, or curriculum requirements in force at the time of his admission to the college either as a beginning student or a transfer. A student may petition to satisfy the university, college, major, or curriculum requirements that may be in force at any time during his residence. Such a student shall be held, however, for *all* of the academic requirements of the Catalogue under which he seeks a degree; not a portion thereof. The new Catalogue becomes effective on July 1 of each year.

Each candidate for a degree in the College of Liberal Arts must complete successfully 128 semester credits, *with at least a 2.0 grade point average*. In addition, he must complete the requirements given below and those of the major field, or prescribed curriculum, as stated in the preceding paragraphs.

A. General University Requirements

Physical Education for Men	Freshman and Sophomore Years
Physical Education for Women	Freshman, Sophomore, and Junior Years
Military Science for Men	Freshman and Sophomore years

*The requirements of the State of New Hampshire are 21 semester credits in education courses, including 6 semester credits in supervised student teaching, and 18 semester credits in one or more fields usually taught in secondary schools. For detailed information concerning requirements, consult the Department of Education.

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B. General College Requirements

1. Special Freshman Requirements

*a. English 1-2 (Freshman English)

*b. A biological science (Biology 1-2) or a physical science

** (Chemistry 1-2, 3-4; Geology 1-2; Mathematics 2, 13; 11, 13; Physics 1-2)

2. Special History Requirement (to be taken in either the Freshman or Sophomore Year)

*History 1, 2 (Introduction to Contemporary Civilization)

3. Sixteen semester credits will constitute a normal semester program. Any student registering for less than 12 or more than 18 semester credits must receive the permission of the Dean of the College.

4. Students who are *bona fide* candidates for teaching positions may use Physics 15, 16 to fulfill the Group II requirements with the permission of the Head of the Department of Education and the Dean of the College. Generally, only students preparing to teach English, languages, or the social sciences may be permitted to make this substitution.

5. All Freshmen in the College of Liberal Arts are assigned on registration to advisers who counsel them until they have selected major departments or prescribed curriculums.

6. Students in both the General Liberal Arts Curriculum and Prescribed Curriculums are advised against over-specialization. Although no attempt is made to limit by regulation the number of courses in a major or the professional courses in a Prescribed Curriculum, more than 36 semester credits in courses in the major department, or more than 66 semester credits in professional courses in a Prescribed Curriculum, are deemed to constitute excessive concentration. Supervisors will counsel students who seem to be concentrating to their detriment to elect courses more likely to contribute to the breadth of their education. The Dean of the College will consult with the supervisors with regard to over-specialization as it may appear in the programs of individual students.

C. Requirements for a Degree in the General Liberal Arts Curriculum

Each candidate for a degree in the G.L.A. Curriculum must satisfy

(1) the General University Requirements, (2) the General College Requirements as stated above, and (3) in addition must complete

*Not counted toward fulfillment of major or group requirements. Chemistry 3-4 is required for pre-medical students and recommended for all who intend to take advanced work in science.

**Students who expect to major in Physics should elect Physics 21-22.

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the requirements listed below and those of the major as described on pages 99 to 119, inclusive.

1. Special Language Requirement

All students pursuing the General Liberal Arts Curriculum are required to pass a reading test in French, German, Latin, or Spanish before graduation. This test will be based on two years of secondary school language training. Graduates of normal schools or teachers colleges who are pursuing the General Liberal Arts Curriculum to qualify for a degree in the field of elementary education are exempt from the language requirement.

2. Group Requirements

A student whose major is included in Groups I, II, or III shall present for the satisfaction of that group requirement some course outside of his major field, one not offered in fulfillment of any other college requirement. A student may not offer in fulfillment of the Group I requirement the elementary course in the language in which he satisfies the special language requirement. The rule presented in the two preceding sentences applies to each student who enters the College subsequent to the spring Commencement of 1943.

I. A student must successfully complete a year's work (two sequential semesters) in this group.

- a. Arts 31, 32
- b. English 13, 14; 15, 16
- c. Humanities 1-2
- d. Languages
- e. Music 33, 34
- f. Philosophy

II. A student must successfully complete a year's work (two sequential semesters) in this group. (Students electing a biological science during their Freshman Year must elect a physical science during their Sophomore Year, or *vice versa*.)

- a. Biological Science (Biology 1-2)
- b. Physical Science (Chemistry 1-2, 3-4; Geology 1-2; Mathematics 2, 13; 11, 13; Physics 1-2; Physics 21-22)

III. A student must successfully complete at least 6 semester credits of work in this group.

- a. Economics
- b. Government
- c. Psychology
- d. Sociology

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3. Divisional Requirements

The student must meet such divisional requirements as may be established in the division in which he is majoring.

4. Major Requirements

Beginning July 1, 1947 each student pursuing the General Liberal Arts Curriculum may select before the end of the second semester of the Freshman Year, and shall select not later than the end of the second semester of Sophomore Year, a major department in which he shall pass courses to a total of 24 semester credits with grades of C or better.* Courses in other departments closely related to the major courses may be counted with the consent of the major supervisor. Departments shall designate in the Catalogue in their descriptions of courses those which will not count for major credit. In addition to satisfactorily completing (1) 24 semester credits in the major field and (2) the divisional requirements, each student, at the discretion of his major department, may be required to:

a. Pass a comprehensive examination in his major field

or

b. Prepare a satisfactory paper on a subject in his field of concentration approved by his supervisor.

D. *Requirements for a Degree — All Prescribed Curriculums*

1. A student registered in a Prescribed Curriculum must satisfy the General University Requirements and the General College Requirements described in previous pages. (See pages 136-137.)
2. Inasmuch as all Prescribed Curriculums prepare for specific vocations, students selecting them are held for the successful completion of all the courses prescribed and generally in the sequence in which they are arranged in the Curriculum. (See pages 141-155.)
3. A student pursuing a Prescribed Curriculum must meet the quality requirements established for that Curriculum. (See pages 120-135.)

*Any student who acquired major credit prior to October 1, 1944, may satisfy his major requirements with grades of 75 or better or C or better.

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GENERAL LIBERAL ARTS CURRICULUM

	First Semester Credits	Second Semester Credits
FRESHMAN YEAR		
Mil. Sci. 1-2	1½	1½
P. E. 31, 32 (<i>For men</i>)	½	½
P. E. 1, 2 (<i>For women</i>)	1	1
Hist. 1, 2, Introduction to Contemporary Civilization	3	3
†A Biological Science (<i>Biol. 1-2</i>) or a Physical Science (<i>Chem. 1-2; §Chem. 3-4; Geol. 1-2; Math. 2, 13; Math. 11, 13; or ** Phys. 1-2</i>)	3-4	3-4
Engl. 1-2, <i>Freshman English</i>	3	3
Electives to meet semester requirements		
	16	16
SOPHOMORE YEAR		
Mil. Sci. 3-4	1½	1½
P. E. 3, 4 (<i>For women</i>)	1	1
P. E. 33, 34 (<i>For men</i>)	½	½
*Hist. 1, 2 <i>Introduction to Contemporary Civilization</i> .	3	3
Elect one year's work from each of the three following groups: (See group requirements page 138.)		
Group I. Arts 31, 32; English 13, 14; 15, 16; Humanities; 1-2; Languages; Music 33, 34; Philosophy	3	3
Group II. †A biological science (<i>Biol. 1-2</i>) or a physical science (<i>Chem. 1-2; §Chem. 3-4; Geol. 1-2; Math. 2-13; Math. 11, 13, or Phys. 1-2</i>)	3-4	3-4
Group III. Economics, Government, Psychology, Sociology	3	3
Electives to meet semester requirements		
	16	16
JUNIOR YEAR		
P. E. 5, 6 (<i>For women</i>)	1	1
Major courses and electives to meet semester requirements		
	16	16
SENIOR YEAR		
Major courses and electives to meet semester requirements		
	16	16

*Hist. 1, 2 may be taken in either the Freshman or Sophomore Year.

†Students electing a Biological Science during their Freshman Year must elect a Physical Science during their Sophomore Year, or *vice versa*.

§Chemistry 3-4 is required of pre-medical students and recommended for all who intend to take advanced work in Sciences.

**Students who intend to complete a major in Physics should elect Physics 21-22.

DETAILED DESCRIPTION OF THIS CURRICULUM APPEARS ON PAGE 99.
THROUGH PAGE 119.

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BUSINESS CURRICULUM

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
FRESHMAN YEAR		
Mil. Sci. 1-2 (<i>For men</i>)	1½	1½
P. E. 31, 32 (<i>For men</i>)	½	½
P. E. 1, 2 (<i>For women</i>)	1	1
*Biol. or Phys. Sci.	4	4
Hist. 1, 2 <i>Introduction to Contemporary Civilization</i> ..	3	3
Engl. 1-2, <i>Freshman English</i>	3	3
B. Ad. 1-2, <i>Elementary Accounting</i>	4	4
	<hr/> 16	<hr/> 16
SOPHOMORE YEAR		
Mil. Sci. 3-4 (<i>For men</i>)	1½	1½
P. E. 33, 34 (<i>For men</i>)	½	½
P. E. 3, 4 (<i>For women</i>)	1	1
Econ. 3, <i>Economic and Commercial Development of U.S.</i>	3	
B. Ad. 24, <i>Introduction to Business</i>		3
Econ. 1-2, <i>Principles of Economics</i>	3	3
Elective from Group I	3	3
Elective from Group III	3	3
Elective from other than Econ. and B. Ad.		
	<hr/> 16	<hr/> 16
<i>Group I.</i> —A year's work (two sequential semesters) from Arts 31, 32; English 13, 14; 15, 16; Hu- manities 1-2; Languages; Music 33, 34; Philoso- phy		
<i>Group III.</i> —Six semester credits from Government; History; Psychology; Sociology		
JUNIOR YEAR		
P. E. 5, 6 (<i>For women</i>)	1	1
B. Ad. 21-22, <i>Commercial Law</i>	3	3
Econ. 51, <i>Labor Economics</i> , Econ. 24, <i>Marketing</i>	3	3
B. Ad. 23, <i>Business Communications</i>	3	
Electives from Econ. and B. Ad.	3	3
Engl. 35, <i>Public Speaking</i>		3
Electives		
	<hr/> 16	<hr/> 16
SENIOR YEAR		
Econ. 53, <i>Money and Banking</i> , B. Ad. 68, <i>Personnel Ad.</i>	3	3
B. Ad. 34, <i>Business Management</i>		3
Econ. 31, <i>Economics and Business Statistics</i>	3	
Econ. 56, <i>Corporation Finance</i>		3
Electives from Econ. and B. Ad.	3	3
Electives		
	<hr/> 16	<hr/> 16

*Students offering one or more units of Physical Science for admission are advised to elect Biol. 1-2. Students offering one or more units of Biological Science for admission are advised to elect Physical Science, or Math. 2, 13.

DETAILED DESCRIPTION OF THIS CURRICULUM APPEARS ON PAGE 120.

UNIVERSITY OF NEW HAMPSHIRE

ACCOUNTING OPTION

	First Semester Credits	Second Semester Credits
SOPHOMORE YEAR		
Mil. Sci. 3-4 (<i>For men</i>)	1½	1½
P. E. 33, 34 (<i>For men</i>)	½	½
P. E. 3, 4 (<i>For women</i>)	1	1
Econ. 3, <i>Economics and Commercial Development of U.S.</i>	3	
B. Ad. 24, <i>Introduction to Business</i>		3
Econ. 1-2, <i>Principles of Economics</i>	3	3
B. Ad. 3-4, <i>Intermediate Accounting</i>	3	3
Elective from Group I	3	3
	<hr/> 16	<hr/> 16

Group I.—A year's work (two sequential semesters)
from Arts 31, 32; English 13, 14; 15, 16; Hu-
manities 1-2; Languages; Music 33, 34; Philoso-
phy

JUNIOR YEAR		
P. E. 5, 6 (<i>For women</i>)	1	1
B. Ad. 7, 8, <i>Cost Accounting</i>	3	3
B. Ad. 21-22, <i>Commercial Law</i>	3	3
B. Ad. 23, <i>Business Communications</i>	3	
Engl. 35, <i>Public Speaking</i>		3
Econ. 56, <i>Corporation Finance</i>	3	
Econ. 24, <i>Marketing</i>		3
Elective from Group III	3	3
Electives		
	<hr/> 16	<hr/> 16

Group III.—Six semester credits from Government; His-
tory; Psychology; Sociology

SENIOR YEAR		
B. Ad. 55, <i>Advanced Accounting</i>	3	
B. Ad. 56, <i>Federal Tax Accounting</i>		3
B. Ad. 57, <i>Auditing</i> , B. Ad. 58, <i>Accounting Systems</i>	3	3
Econ. 53, <i>Money and Banking</i> , B. Ad. 68, <i>Personnel Administrations</i>	3	3
Econ. 31, <i>Economic and Business Statistics</i>	3	
Electives		
	<hr/> 16	<hr/> 16

*Students offering one or more units of Physical Science for admission are advised to elect Biol. 1-2. Students offering one or more units of Biological Science for admission are advised to elect a Physical Science, or Math. 2, 13.

DETAILED DESCRIPTION OF THIS CURRICULUM APPEARS ON PAGE 121.

COLLEGE OF LIBERAL ARTS

HOTEL ADMINISTRATION CURRICULUM

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
FRESHMAN YEAR		
M. S. 1-2	1½	1½
P. E. 31, 32	½	½
Engl. 1-2, <i>Freshman English</i>	3	3
Biol. 1-2, <i>Man and the Living World</i> , or Chem. 1-2, <i>General Chemistry</i>	4	4
History, 1, 2, <i>Introduction to Contemporary Civilization</i>	3	3
H. A. 1, <i>Orientation</i>	½	
Arts 20, <i>Elementary Drafting</i>		2
Elective		
	16	16
SOPHOMORE YEAR		
M. S. 3-4	1½	1½
P. E. 33, 34	½	½
B. Ad. 1-2, <i>Elementary Accounting</i>	4	4
Econ. 1-2, <i>Principles of Economics</i>	3	3
H. A. 21, 22, <i>Introductory Hotel Engineering</i>	4	4
H. Ec. 15-16, <i>Foods</i>	3	3
H. A. 42, <i>Lectures on Hotel Management</i>		½
Elective		
	16	16
*JUNIOR YEAR		
B. Ad. 9-10, <i>Hotel Accounting</i>	3	3
E. E. 31, <i>Circuits and Appliances</i>	4	
M. E. 40, <i>Heating and Ventilating</i>		3
H. Ec. 49-50, <i>Quantity Cookery</i>	3	3
H. A. 5, <i>Hotel Operation</i>	3	
H. A. 44, <i>Lectures on Hotel Management</i>		½
Elective from Group I	3	3
Elective		
	16	16
<i>Group I.</i> —A year's work (two sequential semesters) from Arts 31, 32; English (not including Speech); Hum. 1-2; Music 33, 34; Languages; Philosophy		
*SENIOR YEAR		
B. Ad. 21-22, <i>Commercial Law</i>	3	3
H. Ec. 45, <i>Furniture and Textiles</i>	3	
H. A. 46, <i>Lectures on Hotel Management</i>		½
Psych. 33, <i>Industrial Psychology</i>	3	
Psych. 36, <i>Psychology of Personnel</i>		3
Elective from Group III		
Elective		
	16	16
<i>Group III.</i> —Six semester credits from Government; History; Sociology		

*In addition to the requirements listed above, each student is required to secure before graduation a minimum of 20 points of Hotel Practice credit.

DETAILED DESCRIPTION OF THIS CURRICULUM APPEARS ON PAGE 121.

UNIVERSITY OF NEW HAMPSHIRE

NURSING CURRICULUM*

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
FRESHMAN YEAR		
See Freshman requirements, page 00 (<i>Include Biol. 1-2</i>)		
Chem. 3-4, <i>General Chemistry</i>	4	4
	<hr/> 16	<hr/> 16
SOPHOMORE YEAR		
P. E. 3, 4	1	1
Zool. 17-18, <i>Human Anatomy and Physiology</i>	3	3
Elective from Group I	3	3
	<hr/> 16	<hr/> 16
<i>Group I.</i> —A year's work (two sequential semesters) from Arts 31, 32; English 13, 14; 15, 16; Hu- manities 1-2; Languages; Music 33, 34; Phi- losophy		
JUNIOR YEAR		
P. E. 5, 6	1	1
Agr. Chem. 1, <i>Organic and Biological Chemistry</i>	5	
Zool. 53, <i>Histology</i>	4	
Elective from Group III	3	3
Elective		
	<hr/> 16	<hr/> 16
<i>Group III.</i> —Six semester credits from Economics, Gov- ernment, Psychology, Sociology		

TRAINING PERIOD

Credit earned in training at an approved hospital will apply towards a Bachelor's Degree.

*This Curriculum is intended to precede hospital training.

DETAILED DESCRIPTION OF THIS CURRICULUM APPEARS ON PAGE 122.

COLLEGE OF LIBERAL ARTS

OCCUPATIONAL THERAPY CURRICULUM

	First Semester Credits	Second Semester Credits
FRESHMAN YEAR		
See Freshman requirements, page 136. (Include Biol. 1-2)		
O. T. 23-24, <i>Elementary Drawing and Design</i>	2	2
Soc. 1, <i>Principles of Sociology</i>	3	
Soc. 2, <i>Social Psychology</i>		3
	<hr/> 16	<hr/> 16
SOPHOMORE YEAR		
P. E. 3, 4 or 33, 34	1	1
O. T. 1, <i>Crafts</i>	2	
O. T. 7-8, <i>Elementary Processes in Wood and Plastics</i>	2	2
O. T. 10, <i>Lettering and Printing</i>		2
Psych. 1, <i>Elementary General Psychology</i>	3	
Psych. (47), <i>Mental Hygiene</i>		3
Zool. 17-18, <i>Human Anatomy and Physiology</i>	4	4
Elective from Group III	3	3
Elective		
	<hr/> 16	<hr/> 16
Group III.—Six semester credits from Economics; Geography 1, 2; Government; History		
JUNIOR YEAR		
P. E. 5, 6	1	1
Arts 39, <i>Elementary Photography</i>	3	
*H. Ec. 25, 26, <i>Child Development</i>	3	3
O. T. 4, <i>Crafts</i>		3
O. T. 15-16, <i>Ceramics</i>	2	2
O. T. 47, <i>Theory of Occupational Therapy</i>	2	
Psych. 48, <i>Psychopathology</i>		3
Zool. 19, <i>Kinesiology</i>	3	
Zool. 64, <i>Neurology</i>		4
Elective		
	<hr/> 16	<hr/> 16
SENIOR YEAR		
Arts, 11, <i>Modeling</i>	2	
Hort. 40, <i>Outdoor Floriculture</i>		3
O. T. 5, 6, <i>Crafts</i>	3	3
O. T. 45, <i>Elementary Library Methods</i>	1	
O. T. 48, <i>Theory of Occupational Therapy</i>		3
**O. T. 49-50, <i>Clinical Subjects</i>	2	2
Elective from Group I	3	3
Elective		
	<hr/> 16	<hr/> 16
Group I.—A year's work (two sequential semesters) from Arts 31, 32; Engl. 13, 14; 15, 16; Hum. 1-2; Languages; Music 33, 34; Philosophy		

*A male student may substitute an approved elective.

**Given in alternate years; offered in 1948-1949.

DETAILED DESCRIPTION OF THIS CURRICULUM APPEARS ON PAGE 122.

UNIVERSITY OF NEW HAMPSHIRE

PRE-MEDICAL CURRICULUM

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
FRESHMAN YEAR		
Mil. Sci. 1-2	1½	1½
P. E. 31, 32 or 1, 2	½	½
Biol. 1-2, <i>Man and the Living World</i>	4	4
Chem. 3-4, <i>General Chemistry</i>	4	4
Engl. 1-2, <i>Freshman English</i>	3	3
*Math. 11, 13, <i>Algebra, Trigonometry</i>	3	3
Electives to meet semester requirements		
	17	15
SOPHOMORE YEAR		
Mil. Sci. 3-4 (<i>For men</i>)	1½	1½
P. E. 33, 34 or P. E. 3, 4	½	½
Chem. 25, 26, <i>Introductory Quantitative and Qualitative Analysis</i>	3	3
Hist. 1, 2, <i>Introduction to Contemporary Civilization</i> ..	3	3
†Language (<i>French or German</i>)	3	3
Zool. 7-8, <i>General Zoology and Comparative Anatomy</i> ..	4	4
‡Electives to meet semester requirements		
	16	16
JUNIOR YEAR		
Chem. 47-48, <i>Organic Chemistry</i>	5	5
Language (<i>French or German</i>)	3	3
Physics 1-2, <i>Introductory Physics</i>	4	4
§Social Science	3	3
Electives to meet semester requirements		
	16	16
SENIOR YEAR		
||Humanities Group	3	3
Social Science	3	3
Zool. (Course numbered 51 or above)	4	(or 4)
Electives to meet semester requirements		
	16	16

*Math. 2 may be substituted for Math. 11 if high school prerequisites for Math. 11 are not presented as entrance credit.

†Language. Either French or German. If the student passes an entrance reading test in either French or German, one year of the same language will fulfill the language requirement. To fulfill the requirement the student must complete either French 3-4, French 5-6, or German 5-6.

‡Electives. No more than 16 semester hours of Biology (including Botany, Bacteriology, Entomology, and Zoology), Chemistry, and Physics in addition to the required courses may be taken as elective.

§Social Science. The student must complete 12 semester hours selected from courses in the following departments. Economics, Government, History (other than Hist. 1, 2), Psychology, Sociology. Courses from at least three of the five departments must be presented.

||Humanities Group. The student must complete 6 semester hours from the following courses: Humanities 1-2; Music 33, 34; Arts 31, 32; Philosophy 1, 2, 3, 4, 17, 18; English 13, 14, 15, 16 (or English courses numbered 51-100).

DETAILED DESCRIPTION OF THIS CURRICULUM APPEARS ON PAGE 124.

COLLEGE OF LIBERAL ARTS

SECRETARIAL CURRICULUM*

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
FRESHMAN YEAR		
See Freshman requirements, page 136.		
Electives to meet semester requirements.		
	16	16
SOPHOMORE YEAR		
P. E. 3, 4 or 33, 34	1	1
Econ. 3, <i>Economic and Commercial Development of the</i>		
U. S.	3	
Engl. (<i>A year of English</i>)	3	3
Sec. St. 1-2, <i>Shorthand</i>	3	3
Sec. St. 7-8, <i>Typewriting</i>	2	2
Sec. St. 23-24, <i>Business Writing</i>	3	3
Suggested electives to meet semester requirements		
	16	16
JUNIOR YEAR		
P. E. 5, 6	1	1
B. Ad. 1-2, <i>Elementary Accounting</i>	4	4
Econ. 1-2, <i>Principles of Economics</i>	3	3
†Sec. St. 3-4, <i>Advanced Shorthand</i>	3	3
†Sec. St. 9-10, <i>Advanced Typewriting</i>	2	2
Electives to meet semester requirements		
	16	16
SENIOR YEAR		
Sec. St. 11, <i>Filing</i>	2	
Sec. St. 13, <i>Office Machines</i>		2
Sec. St. 17-18, <i>Secretarial Office Procedure and Practice</i>	3	3
Sec. St. 22, <i>Advanced Transcription</i> (Not required) ...		3
Electives to meet semester requirements		
	16	16

*Students preparing to teach Secretarial Subjects must elect in addition a sufficient number of courses in Economics, Business Administration, and Education to meet state requirements.

†A grade of C or better in Sec. St. 8 will be required of students electing Sec. St. 9-10; and a grade of C or better in Sec. St. 2 will be required of students electing Sec. St. 3-4.

DETAILED DESCRIPTION OF THIS CURRICULUM APPEARS ON PAGE 124.

UNIVERSITY OF NEW HAMPSHIRE

TWO-YEAR SECRETARIAL CURRICULUM*

(No students will be admitted to this Curriculum in 1948-1949)

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
P. E. 1, 2	2	2
B. Ad. 1-2, <i>Elementary Accounting</i>	4	4
Sec. St. 1-2, <i>Beginning Shorthand</i>	3	3
Sec. St. 7-8, <i>Beginning Typewriting</i>	2	2
Social Science	3	3
Electives		
	<hr/> 16	<hr/> 16 ^o
	<i>Third Semester Credits</i>	<i>Fourth Semester Credits</i>
P. E. 3, 4	1	1
†Sec. St. 3-4, <i>Advanced Shorthand</i>	3	3
†Sec. St. 9-10, <i>Advanced Typewriting</i>	2	2
Sec. St. 11, <i>Filing</i>	2	
Sec. St. 13, <i>Office Machines</i>		2
Sec. St. 17-18, <i>Office Procedure and Practice</i>	3	3
Sec. St. 23-24, <i>Business Writing</i>	3	3
Electives		
	<hr/> 16	<hr/> 16

*It is assumed that the entering student has had no commercial work in high school. Modifications in the program will be made to fit individual cases.

†A grade of C or better in Sec. St. 8 will be required of students electing Sec. St. 9-10; and a grade of C or better in Sec. St. 2 will be required of students electing Sec. St. 3-4.

COLLEGE OF LIBERAL ARTS

SOCIAL SERVICE CURRICULUM

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
FRESHMAN YEAR		
See Freshman requirements, page 136. (<i>Include Biol. 1-2</i>)		
Soc. 1, <i>Principles of Sociology</i>	3	
Soc. 2, <i>Social Psychology</i>		3
Electives to meet semester requirements		
-	16	16
SOPHOMORE YEAR		
Mil. Sci. 3-4	1½	1½
P. E. 33, 34 (<i>For men</i>)	½	½
P. E. 3, 4 (<i>For women</i>)	1	1
Bact. 3, <i>Elements of Microbiology</i>	3	
Bact. 4, <i>Public Health and Sanitation</i>		3
Psych. 1, <i>Elementary General Psychology</i>	3	
Soc. 41, <i>Social Pathology</i>	3	
Soc. 42, <i>Community Organization</i>		3
Elective from Group I	3	3
Electives		
	16	16
<i>Group I.</i> —A year's work (two sequential semesters) from Arts 31, 32; Engl. 13, 14; 15, 16; Hum. 1-2; Languages; Music 33, 34; Philosophy		
JUNIOR YEAR		
P. E. 5, 6 (<i>For women</i>)	1	1
Soc. 71, <i>Crime and Its Social Treatment</i>	3	
Soc. 72, <i>The Family</i>		3
Soc. 73, <i>Principles of Social Case Work</i>	3	
Soc. 75, <i>Methods of Social Research</i>	3	
Elective from Group III	3	3
Electives		
	16	16
<i>Group III.</i> —Six semester credits from Economics, Gov- ernment, History		
SENIOR YEAR		
Psych. 47, <i>Mental Hygiene</i>	3	
Soc. 84, <i>Methods of Social Progress</i>		3
Soc. 88, <i>Recreation and Leisure</i>		3
Soc. 95, 96, <i>Sociological Research</i>	3	3
Soc. 97, 98, <i>Social Service Field Work</i>	3	3
Electives		
	16	16

DETAILED DESCRIPTION OF THIS CURRICULUM APPEARS ON PAGE 127.

UNIVERSITY OF NEW HAMPSHIRE

ART EDUCATION CURRICULUM

	First Semester Credits	Second Semester Credits
FRESHMAN YEAR		
See Freshman requirements, page 136.		
Arts 23, 24, <i>Elementary Drawing and Design</i>	3	3
Elective		
	16	16
SOPHOMORE YEAR		
Mil. Sci. 3-4 (<i>For men</i>)	1½	1½
P. E. 3, 4 or 33, 34	1	1
Arts 15, 16, <i>Ceramics</i>	2	2
Arts 25, 26, <i>Advanced Drawing and Design</i>	2	2
Ed. 41, <i>Principles of Educational Psychology</i>	3	
Ed. 42, <i>Educational Psychology of Adolescence</i>		3
Elective from Group I	3	3
Elective from Group III	3	3
Elective		
	16	16
<i>Group I.</i> —A year's work (two sequential semesters) from English 13, 14; 15, 16; Languages; Music 33, 34; Philosophy		
<i>Group III.</i> —Six semester credits from Economics; Gov- ernment; History; Psychology; Sociology		
JUNIOR YEAR		
P. E. 5, 6 (<i>For women</i>)	1	1
Arts 31, 32, <i>Introduction to The Arts</i>	3	3
Arts 29, 30, <i>Advanced Painting, Water Color</i>	3	3
Arts 35, <i>Stagecraft</i>	½-1	
Arts 43, <i>Historic Costume</i>	3	
H. E. 32, <i>Home Furnishing</i>		3
Ed. 51, <i>Social Backgrounds of American Secondary Edu- cation</i> and Ed. 52, <i>Principles of American Second- ary Education</i>	3	3
Ed. 61, <i>Prin. and Problems of Teaching in the Sec- ondary Schools</i>		4
Elective		
	17	17
SENIOR YEAR		
Arts 3, <i>Crafts</i>	3	
Arts 29, <i>Advanced Painting, Oil</i>	3	
Arts 35, <i>Stagecraft</i>	½-1	
Art-Ed. 91, <i>Problems of Teaching Art in Elementary Schools</i>	3	
Art-Ed. 92, <i>Problems of Teaching Art in Secondary Schools</i>	3	
Ed.-Art 94, <i>Supervised Teaching</i>		12
Elective		
	18	12

DETAILED DESCRIPTION OF THIS CURRICULUM APPEARS ON PAGE 130.

COLLEGE OF LIBERAL ARTS

MUSIC EDUCATION CURRICULUM

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
FRESHMAN YEAR		
See Freshman requirements, page 136.		
*Electives		
**Recitals		
	16	16
SOPHOMORE YEAR		
Mil. Sci. 3-4	1½	1½
P. E. 3, 4 or P. E. 33, 34	1	1
Ed. 41, <i>Principles of Educational Psychology</i>	3	
Ed. 42, <i>Educational Psychology of Adolescence</i>		3
Mus. 11-12, <i>Harmony</i>	4	4
Mus. 45-46, <i>Music History and Literature</i>	3	3
Applied Music	2	2
Mus. Organizations	½	½
Elective from Group III	3	3
	16	16
<i>Group III.—Economics, Government, History, Psychology, Sociology</i>		
JUNIOR YEAR		
P. E. 5-6 (<i>For women</i>)	1	1
Mu.-Ed. 91, <i>Problems in the Teaching of Elementary School Music</i>	3	
Ed. 52, <i>Principles of American Secondary Ed.</i>		3
Language, (French, German)	3	3
Mus. 15, 16, <i>Adv. Harmony and Counterpoint</i>	4	4
Mus. 41-42, <i>Principles of Conducting</i>	1½	1½
Mu.-Ed. 96, <i>Teaching of Woodwinds</i>		2
Mu.-Ed. 97, <i>Teaching of Brass and Percussion</i>	2	
Applied Music	3	3
Music Organizations	½	½
	18	18

*Recommended that students who are seriously considering the Music Education curriculum take Mus. 11-12, two hours of Applied Music, and one hour Music Organizations in Freshman Year. (A minimum of 16 semester hours in Applied Music must be offered by students in Mus-Ed Curriculum).

**Recitals—Students enrolled in this Curriculum must accumulate a minimum of 24 points in the Sophomore, Junior, and Senior Years. Attendance at each concert or recital constitutes one point.

UNIVERSITY OF NEW HAMPSHIRE

SENIOR YEAR

Ed. 51, <i>Social Backgrounds of American Secondary Education</i>	3	
Mu.-Ed. 92, <i>Problems in Teaching of Secondary School Music</i>	3	
Mus. 97-98, <i>Orchestration and Chorestration</i>	2	2
Mu.-Ed. 95, <i>Teaching of String Instruments</i>	2	
Ed.-Mu. 93, <i>Supervised Teaching of Elementary School Music</i>		3-6
Ed.-Mu. 94, <i>Supervised Teaching of Secondary School Music</i>		3-6
Electives to meet semester requirements	2	2
Applied Music	2	2
	18	10

DETAILED DESCRIPTION OF THIS CURRICULUM APPEARS ON PAGE 132.

COLLEGE OF LIBERAL ARTS

PHYSICAL EDUCATION TEACHER PREPARATION CURRICULUM FOR MEN

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
FRESHMAN YEAR		
See Freshman requirements, page 136. (<i>Include Biol. 1-2</i>)		
Basic course in second teaching major, <i>First year</i>		
	16	16
SOPHOMORE YEAR		
Mil. Sci. 3-4	1½	1½
P. E. 33, 34	½	½
Ed. 41, <i>Principles of Educational Psychology</i>	3	
Ed. 42, <i>Educational Psychology of Adolescence</i>		3
P. E. 23, <i>Principles of Physical Education</i>	3	
Second teaching major, <i>Second year</i>	3	3
Zool. 17-18, <i>Human Anatomy and Physiology</i>	3	3
Elective		
	16	16
JUNIOR YEAR		
Ed. 51, <i>Social Backgrounds of American Secondary Education</i> , and Ed. 52, <i>Principles of American Secondary Education</i>	3	3
Ed. (61), <i>Principles and Problems of Teaching in Secondary Schools</i>		4
‡Ed.-P. E. 93, <i>Directed Teaching in Physical Education</i>		3
P. E. 61, <i>Problems of Teaching in Physical Education</i>	3	
†Problems of coaching, P. E. 45, 46, 47, or 48	4	
†Problems of coaching, P. E. 45, 46, 47, or 48		4
Second teaching major	3	3
Elective, <i>First teaching minor</i>		
	16	18
SENIOR YEAR		
‡Ed.-P. E. 93, <i>Directed Teaching in Physical Education</i>	3	
P. E. 65, <i>Administration of Physical Education in Secondary Schools</i>	3	
†Problems of coaching P. E. 45, 46, 47, or 48	4	
Problems in teaching, <i>Second teaching major, i.e., Eng.-Ed. 91, etc.</i>	3	
Second teaching major	3	
Supervised teaching in major or majors, <i>i.e., Ed.-Eng. 94, etc.</i>		6-12
Elective:		
P. E. 63, <i>Care and Prevention of Athletic Injuries</i>		
	18	6-12§

†Four problems of coaching courses are required.

‡This course is required and may be elected in the second semester of the Junior or Senior Year or the first semester of the Senior Year.

§The Student should take enough credits in Student Teaching to reach the 128 needed for graduation. He should not, however, take less than 6 credits.

DETAILED DESCRIPTION OF THIS CURRICULUM APPEARS ON PAGE 133.

UNIVERSITY OF NEW HAMPSHIRE

PHYSICAL EDUCATION TEACHER PREPARATION CURRICULUM FOR WOMEN

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
FRESHMAN YEAR		
See Freshman requirements, page 136. (<i>Include Biol. 1-2</i>)		
P. E. 23, <i>Principles of Physical Education</i>	3	
P. E. 11, 12	1	1
Elective		
	<hr/> 16	<hr/> 16
SOPHOMORE YEAR		
P. E. 3, 4	1	1
Ed. 41, <i>Principles of Educational Psychology</i>	3	
Ed. 42, <i>Educational Psychology of Adolescence</i>		3
P. E. 53, 54, <i>Survey of Dance</i>	2	2
Zool. 17-18; <i>Human Anatomy and Physiology</i>	3	3
Elective from Group I	3	3
Elective from Group III	3	3
Elective		
	<hr/> 16	<hr/> 16
<i>Group I.</i> —A year's work (two sequential semesters) from Arts 31, 32; English 13, 14; 15, 16; Humanities 1-2; Languages; Music 33, 34; Philosophy		
<i>Group III.</i> —Six semester credits from Government; History; Psychology; Sociology; Economics		
JUNIOR YEAR		
Physical Education Option†		
P. E. 5, 6	1	1
Ed. 51, <i>Social Backgrounds of American Secondary Education</i> , and Ed. 52, <i>Principles of Secondary Education</i>	3	3
P. E. (36), <i>Recreation Leadership</i>	3	
P. E. 63, 64, <i>Theory of Team Sports</i>	2	2
Zool. 19, <i>Kinesiology</i>	3	
Elective		3
Elective from other than Physical Education		
	<hr/> 16	<hr/> 16
Recreation Option		
P. E. 5, 6	1	1
Arts 35, <i>Stagecraft</i>	$1\frac{1}{2}$	
Arts 3 or 4, <i>Crafts</i>	2	
Engl. 48, <i>Dramatic Workshop</i>		3
Ed. 51, <i>Social Background of American Secondary Ed.</i>	3	
P. E. 24, <i>Organized Camping</i>		3
P. E. (36), <i>Recreational Leadership</i>	3	
P. E. 63, 64, <i>Theory of Team Sports</i>	2	2
Elective from Group III, or Sociology 1, 2	3	3
Elective from other than Physical Education		
	<hr/> 16	<hr/> 16

COLLEGE OF LIBERAL ARTS

SENIOR YEAR	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
Physical Education Option		
P. E. 55, <i>Remedial Gymnastics</i> , P. E. 56, <i>Health Education</i>	3	3
P. E. (66), <i>Administration of Physical Education</i>	3	
P. E. 73, 74, <i>Theory of Individual Sports</i>	1 or 2	1 or 2
P. E.-Ed. 91, <i>Problems in the Teaching of Physical Education for Women</i>	3	
Ed.-P. E. 92, <i>Directed Teaching of Physical Education for Women</i>		6
Elective from other than Physical Education		
	<hr/> 16	<hr/> 16
Recreation Option		
Geog. 3, <i>Physical Geography</i>	3	
*Music 33, <i>Music Appreciation</i> , or Music 34	2	
P. E. (66), <i>Administration of Physical Education</i>	3	
P. E.-Ed. 91, <i>Problems in the Teaching of Physical Education for Women</i>	3	
Ed.-P. E. 92, <i>Directed Teaching of Physical Education for Women</i>		3
Soc. 42, <i>Community Organization</i>		3
Elective from Group I	3	3
Elective		
	<hr/> 16	<hr/> 16

†Students desiring to teach in areas in addition to Physical Education must plan to take Ed. 61. They must also elect 18 hours in this second field.

Students desiring to go into physical therapy may, by petitioning, make certain substitutions in the above program.

*If Music has already been taken in the Sophomore Year, 3 additional hours in Group I must be taken in the Senior Year.

DETAILED DESCRIPTION OF THIS CURRICULUM APPEARS ON PAGE 133.

UNIVERSITY OF NEW HAMPSHIRE

UNIVERSITY TEACHER PREPARATION PROGRAM*

(This is not a Prescribed Curriculum)

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
FRESHMAN YEAR		
See Freshman requirements, page 136.		
†Teaching major (<i>First year</i>)	16	16
SOPHOMORE YEAR‡		
Mil. Sci. 3-4	1½	1½
P. E. 3, 4 or 33, 34 (<i>For men</i>)	1	1
Engl. (<i>A year of English</i>) or Humanities 1-2, <i>Humanities</i>	3	3
Ed. 41, <i>Principles of Educational Psychology</i> , and Ed. 42, <i>Educational Psychology of Adolescence</i>	3	3
Teaching major, <i>Second year</i>	3	3
First teaching minor, <i>First year</i>	3	3
	16	16
JUNIOR YEAR		
P. E. 5, 6 (<i>For women</i>)	1	1
Ed. 51, <i>Social Backgrounds of American Secondary Education</i> , and Ed. 52, <i>Principles of American Secondary Education</i>	3	3
Ed. 61, (61), <i>Principles and Problems of Teaching in the Secondary School</i>	4	or 4
Teaching major, <i>Third year</i>	3	3
First teaching minor, <i>Second year</i>	3	3
Second teaching minor, <i>First year</i>	3	3
	16	18

*This program may be completed by students majoring in any of the departments of the University offering work, the subject matter of which is offered in the secondary school. Students must, consequently, fulfill major requirements. A satisfactory completion of this program will entitle the student to a certificate indicating the fact.

†See sections covering Department of Education (page 106) for description of teaching major and teaching minor subjects.

‡General Liberal Arts students satisfactorily completing this program may request release from the Sophomore Group requirements of the General Liberal Arts Curriculum and are entitled to either the B.A. or B.S. Degree, whichever is conferred for the subject in which the student is majoring.

COLLEGE OF LIBERAL ARTS

	First Semester Credits	Second Semester Credits
SENIOR YEAR		
||Teaching major, <i>Fourth year</i>	3	
§First teaching minor, <i>Third year</i>	3	
§Second teaching minor, <i>Second year</i>	3	
Problems in teaching, <i>Major</i>	3	
Problems in teaching, <i>Minor</i>	3	
Supervised teaching		6-12
Electives to meet semester requirements	3	
	<hr/> 18	<hr/> **6-12

||Remainder of the total of 24 semester credits required for the satisfactory completion of the program.

§Remainder of the total of 12 semester credits required in each teaching minor.

**The student should take enough credits in Student Teaching to reach the 128 needed for graduation. He may not, however, take less than six credits.

DETAILED DESCRIPTION OF THIS CURRICULUM APPEARS ON PAGE 135.

COLLEGE OF TECHNOLOGY

LAUREN E. SEELEY, *Dean*

DEPARTMENTS

CHEMISTRY AND CHEMICAL
ENGINEERING
CIVIL ENGINEERING
ELECTRICAL ENGINEERING

MATHEMATICS
MECHANICAL ENGINEERING
PHYSICS

REQUIREMENTS FOR DEGREES

Baccalaureate Degrees.—Each candidate for a degree must complete 144 semester credits including the courses required in one of the Four-Year Curriculums. These degrees are: B.S. in Chem., B.S. in Ch.E., B.S. in C.E., B.S. in B.C., B.S. in E.E., B.S. in M.E., and B.S. in Phys.

Professional Degrees.—Mechanical, Electrical, and Civil Engineering graduates of the University of New Hampshire are eligible to register as candidates for professional degrees in these three branches of Engineering.

These degrees will be granted, after the preparation and submission of acceptable theses, to those having not less than four years' satisfactory professional experience subsequent to the Bachelor's Degree, in which the applicants have wholly or in part supervised, directed, or designed engineering work; or have been in responsible charge of instruction or research in Engineering. The acceptability of the theses and professional experience is determined by an Examining Committee.

PROCEDURE.—The procedure for candidates for professional Engineering degrees is as follows:

(1) Prepare an outline for a thesis after consultation with the Head of the Department concerned. This consultation may be by letter.

(2) When the thesis subject is accepted by the Head of the Department in which the degree is to be taken, the candidate will be registered in the Recorder's Office. This registration must be completed by October 1 of the academic year in which the degree is to be conferred.

COLLEGE OF TECHNOLOGY

(3) The first draft of the thesis must be submitted to the professor in charge not later than March 1, and the complete thesis in its final form by May 1.

(4) Pass an oral examination at the University covering the candidate's professional practice and the engineering principles underlying the thesis.

THESIS.— The thesis must be typewritten upon standard paper, 8½ by 11 inches, medium weight, neatly bound in black cloth, and gilt-lettered on the first cover with title, name of author, degree sought, and year of graduation. The title page should bear the following statement:

"A thesis submitted to the University of New Hampshire in partial fulfillment of the requirements for the professional degree of mechanical engineer (electrical engineer, civil engineer)."

Whenever a thesis is printed in any periodical, it must be designated as having been accepted as a Professional Engineering Thesis by the University of New Hampshire.

Two bound copies must be filed before Commencement Day, one with the Librarian and one with the Head of the Department in which the major work is done.

CURRICULUMS

The College of Technology offers the following Four-Year Curriculums:

BUILDING CONSTRUCTION CURRICULUM.—This Curriculum is designed to give the student basic training and instruction in engineering and general building construction practice; to acquaint him with and to train him in the problems connected with the construction of light buildings and houses; to develop in the student an understanding of and appreciation for the relationships of the client, architect, engineer, builder, manufacturer, and public agencies in planning, designing, financing, and erecting public and private buildings.

CHEMISTRY AND CHEMICAL ENGINEERING CURRICULUMS.— These Curriculums are intended to prepare the student for the career of a professional chemist or chemical engineer and to give a good foundation for further study in graduate schools leading to original and independent research.

Instruction is imparted by lectures, recitations, and carefully supervised laboratory work. The laboratory study is largely individual, and the work of each student is conducted with reference not only to the particular subject he may have in view, but also to the acquirement of a broad knowledge of chemical science. The student is given

UNIVERSITY OF NEW HAMPSHIRE

a training in either German or French to enable him to read with ease the chemical literature, and a grounding in Mathematics and Physics necessary for Advanced Theoretical Chemistry or Chemical Engineering. In the Chemistry Option further courses in pure science and an independent research project are offered, whereas the Option in Chemical Engineering offers a limited amount of special work in Mechanics, Electrical Engineering and Thermodynamics, and thorough courses in undergraduate chemical engineering subjects. The student in both Options is encouraged to develop the power of solving chemical problems by independent thought through the aid of the reference library and chemical periodicals.

CIVIL ENGINEERING CURRICULUM.—This Curriculum is designed to give the student theoretical and practical instruction in the principles upon which the practice of Civil Engineering is based, and to allow him the opportunity to apply these principles to problems of professional practice in the classroom, in the design room, and in the field.

Civil Engineering, the oldest of the engineering professions, covers a broad field of activity, including Topographical, Structural, Transportation, Hydraulic and Sanitary Engineering. This Curriculum places about equal emphasis upon each of these various branches and allows the student some opportunity to develop his special interests through the thesis requirement.

ELECTRICAL ENGINEERING CURRICULUM.—The Electrical Engineering Curriculum is intended to meet the demands of young men fitting themselves for professional Engineering in connection with the various applications of electricity.

Courses are presented by lectures, recitations, and laboratory practice in such a manner as to make the material of immediate service to the graduate, as well as prepare him to understand the constantly increasing number of new developments in this field.

MECHANICAL ENGINEERING CURRICULUM.—The Mechanical Engineering Curriculum is intended to prepare young men for positions in the field of the mechanical industries. The courses in the Curriculum include Mathematics, Physics and Chemistry, Drawing, Shop Work, Machine Design, Electrical Engineering, Power Engineering, and also courses in Economics and English. Throughout the Curriculum the theoretical work is supplemented by practice in mechanical operations and scientific research, by training in the use of tools for working metals, and by experimental tests and demonstrations in the mechanical, electrical, chemical, and physical laboratories.

PHYSICS CURRICULUM.—The Technology Curriculum in Physics is similar to physics curriculums offered in other institutions endeavoring to emphasize the adaptations of Physics to industry. The pre-

COLLEGE OF TECHNOLOGY

scribed work of the Freshman Year follows the work given students in both Electrical and Mechanical Engineering.

The position of physics in industry will be of more importance in the future. The training of physicists for positions in industry is made more valuable when the student physicist takes much of his college work in classes with other Engineering students.

ALUMNI REPRESENTATION.—An Advisory Committee of Alumni of the College of Technology, composed of men in direct contact with industry and practical professional affairs, serves to keep the Faculty in touch with developments in the several fields which attract our graduates. Members of this committee also serve as consultants when important changes in curriculums, Faculty personnel, and policies of administration are considered. The members are:

John T. Croghan, B.S. in M.E., '08, 574 Chestnut Street, Waban, Mass.

Donald W. Loiselle, B.S. in C.E., '40 (M.S., Harvard, '31), Bridgeport Hydraulic Company, Bridgeport, Ct.

Austin S. Norcross, B.S. in E.E., '25, 50 Hunt Street, Watertown 72, Mass.

Lester A. Pratt, Ph.D., '09, 7 Everett Avenue, Winchester, Mass.

UNIVERSITY OF NEW HAMPSHIRE

BUILDING CONSTRUCTION

	First Semester Credits	Second Semester Credits
FRESHMAN YEAR		
P. E. 31-32	$\frac{1}{2}$	$\frac{1}{2}$
Mil. Sci. 1-2	$1\frac{1}{2}$	$1\frac{1}{2}$
Chem. 3-4, <i>General Chemistry</i>	4	4
C. E. 2, <i>Surveying</i>		2
Engl. 1-2, <i>Freshman English</i>	3	3
Math. 11, <i>Algebra</i>	3	
Math. 13, <i>Trigonometry</i>	3	
Math. 14, <i>Analytic Geometry</i>		3
Math. 16, <i>Calculus I</i>		3
M. E. 1-2, <i>Engineering Drawing</i>	2	2
	17	19
SOPHOMORE YEAR		
P. E. 33-34	$\frac{1}{2}$	$\frac{1}{2}$
Mil. Sci. 3-4	$1\frac{1}{2}$	$1\frac{1}{2}$
B-CE 11-12, <i>Domestic Architecture</i>	2	2
C. E. 11, <i>Surveying</i>	3	
Econ. 1-2, <i>Principles of Economics</i>	3	3
Geol. 7, <i>General Geology</i>		2
Math. 17-18, <i>Calculus II and III</i>	3	3
Phys. 21-22, <i>General Physics</i>	6	6
	19	18
JUNIOR YEAR		
B. Ad. 1-2, <i>Elementary Accounting</i>	4	4
B-CE 21-22, <i>Building Construction</i>	3	3
C. E. 15, <i>Engineering Materials</i>	3	
C. E. 27, 28, <i>Theory of Structures</i>	4	4
E. E. (33), <i>Fundamentals of Electricity</i>		4
M. E. 9-10, <i>Mechanics</i>	3	4
	17	19
SENIOR YEAR		
B-CE 31-32, <i>Professional Practices</i>	3	3
C. E. 31, <i>Community Planning</i>	3	
C. E. 62, <i>Soil Mechanics and Foundations</i>		3
C. E. 65, <i>Structural Design</i>	4	
C. E. 66, <i>Reinforced Concrete Structures</i>		4
Econ. 24, <i>Marketing</i>		3
M. E. 21, <i>Heat Power Engineering</i>	3	
M. E. 39, <i>Heating and Air Conditioning</i>	2	
Approved Elective	3	4
	18	17

COLLEGE OF TECHNOLOGY

TECHNOLOGY CURRICULUM IN CHEMISTRY AND CHEMICAL ENGINEERING

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
FRESHMAN YEAR		
P. E. 31, 32	$\frac{1}{2}$	$\frac{1}{2}$
Mil. Sci. 1-2	$1\frac{1}{2}$	$1\frac{1}{2}$
Chem. 3-6, <i>General; Inorganic</i>	4	6
Engl. 1-2, <i>Freshman English</i>	3	3
M. E. 1, <i>Engineering Drawing</i>	2	
Math. 11, <i>Algebra</i>	3	
Math. 13, <i>Trigonometry</i>	3	
Math. 14, <i>Analytic Geometry</i>		3
Math. 16, <i>Calculus I</i>		3
Ger. 1-2, <i>Elements of German Grammar</i>	3	3
	20	20
SOPHOMORE YEAR		
P. E. 33, 34	$\frac{1}{2}$	$\frac{1}{2}$
Mil. Sci. 3-4	$1\frac{1}{2}$	$1\frac{1}{2}$
Chem. 21, <i>Semi-Micro Qualitative Analysis</i>	4	
Chem. 22, <i>Quantitative Analysis</i>		5
Ger. 5-6, <i>Scientific German</i> or Econ. 1-2 or Hist. 1-2 or Engl. 35 or B. Ad. 24 or <i>Approved Elective</i>	3	3
Math. 7-8, <i>Calculus</i>	3	3
Phys. 21-22	6	6
	18	19
JUNIOR YEAR		
CHEMISTRY OPTION		
Chem. 31, <i>Stoichiometry and Tech. Quantitative Analysis</i>	5	
Chem. 47-48, <i>Organic</i>	5	5
Chem. 62, <i>Instrumental Analysis</i>		4
Chem. 83-84, <i>Physical Chemistry</i>	5	5
Gov't. 1, 4 or <i>Approved Elective</i>	3	3
	18	17
CHEMICAL ENGINEERING OPTION		
Chem. 31, <i>Stoichiometry and Tech. Quantitative Analysis</i>	5	
Chem. 47-48, <i>Organic Chemistry</i>	5	5
Chem. 71-72, <i>Unit Processes</i>	2	2
Chem. 74, <i>Unit Operations</i>		3
Chem. 83-84, <i>Physical Chemistry</i>	5	5
M. E. 9, 10, <i>Mechanics</i> or <i>Approved Elective</i>	3	3
	20	18

UNIVERSITY OF NEW HAMPSHIRE

	SENIOR YEAR	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
CHEMISTRY OPTION			
Chem. 55, 56, <i>Organic Chemistry</i>		3	3
Chem. 71-72, <i>Unit Processes or Approved Elective</i>		2	2
Chem. 85, 86, <i>Physical Chemistry</i>		3	3
Chem. 87, 88, <i>Chemical Literature and Seminar</i>		1	1
Chem. 89-90, <i>Thesis or Approved Elective</i>		5	5
Soc. 1-2 or Psych. 1-2 or <i>Approved Elective</i>		3	3
		<hr/> 17	<hr/> 17
CHEMICAL ENGINEERING OPTION			
Chem. 75, <i>Unit Operations</i>		3	
Chem. 76, <i>Chemical Engineering Economics</i>			3
Chem. 77, <i>Unit Operations Laboratory</i>		3	
Chem. 78, <i>Chemical Plant Design</i>			3
Chem. 79, <i>Chemical Engineering Thermodynamics</i>		3	
Chem. 80, <i>Chemical Engineering Project</i>			5
Chem. 87, 88, <i>Chemical Literature and Seminar</i>		1	1
E. E. 33, <i>Fundamentals of Electricity</i>		4	
Gov't. 1, 4, or <i>Elective</i>		3	3
		<hr/> 17	<hr/> 15

COLLEGE OF TECHNOLOGY

CIVIL ENGINEERING

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
FRESHMAN YEAR		
P. E. 31-32	$\frac{1}{2}$	$\frac{1}{2}$
Mil. Sci. 1-2	$1\frac{1}{2}$	$1\frac{1}{2}$
Chem. 3-4, <i>General Chemistry</i>	4	4
C. E. 2, <i>Surveying</i>		2
Engl. 1-2, <i>Freshman English</i>	3	3
Math. 11, <i>Algebra</i>	3	
Math. 13, <i>Trigonometry</i>	3	
Math. 14, <i>Analytic Geometry</i>		3
Math. 16, <i>Calculus I</i>		3
M. E. 1-2, <i>Engineering Drawing</i>	2	2
	<hr/> 17	<hr/> 19
SOPHOMORE YEAR		
P. E. 33-34	$\frac{1}{2}$	$\frac{1}{2}$
Mil. Sci. 3-4	$1\frac{1}{2}$	$1\frac{1}{2}$
C. E. 3-4, <i>Surveying</i>	6	3
C. E. 6, <i>Route Surveying</i>		3
Math. 7-8, <i>Calculus</i>	3	3
Phys. 21-22, <i>General Physics</i>	6	6
	<hr/> 17	<hr/> 17
JUNIOR YEAR		
C. E. 15, <i>Engineering Materials</i>	3	
C. E. 27-28, <i>Theory of Structures</i>	4	4
C. E. 41, 42, <i>Student Chapter A.S.C.E.</i>	$\frac{1}{2}$	$\frac{1}{2}$
C. E. 52, <i>Fluid Mechanics</i>		4
E. E. (33), <i>Fundamentals of Electricity</i>		4
Geol. 7, <i>General Geology</i>	2	
M. E. 9-10, <i>Mechanics</i>	3	4
M. E. 21, <i>Heat Power Engineering</i>	3	
Econ. 1-2, <i>Principles of Economics</i>	3	3
	<hr/> 18 $\frac{1}{2}$	<hr/> 19 $\frac{1}{2}$
SENIOR YEAR		
C. E. 38, <i>Thesis</i>		2
C. E. 43, 44, <i>Student Chapter A.S.C.E.</i>	$\frac{1}{2}$	$\frac{1}{2}$
C. E. 61, <i>Highway Engineering and Transportation</i> ..	4	
C. E. 62, <i>Soil Mechanics and Foundations</i>		3
C. E. 63-64, <i>Hydraulic and Sanitary Engineering</i>	4	4
C. E. 65, <i>Structural Design</i>	4	
C. E. 66, <i>Reinforced Concrete Structures</i>		4
Engl. 23, <i>Writing of Technical Reports</i>		2
Approved Elective	5	3
	<hr/> 17 $\frac{1}{2}$	<hr/> 18 $\frac{1}{2}$

UNIVERSITY OF NEW HAMPSHIRE

ELECTRICAL AND MECHANICAL ENGINEERING

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
FRESHMAN YEAR		
P. E. 31, 32	$\frac{1}{2}$	$\frac{1}{2}$
Mil. Sci. 1-2	$1\frac{1}{2}$	$1\frac{1}{2}$
Chem. 3-4, <i>General Chemistry</i>	4	4
Engl. 1-2, <i>Freshman English</i>	3	3
Math. 11, <i>Algebra</i>	3	
Math. 13, <i>Trigonometry</i>	3	
Math. 14, <i>Analytical Geometry</i>		3
Math. 16, <i>Calculus</i>		3
M. E. 1-2, <i>Engineering Drawing</i>	2	2
M. E. S1, S2, <i>Elementary Shop Practice</i>	2	2
	<hr/> 19	<hr/> 19

Note: The program for the Freshman Year in the curriculums in Electrical Engineering and Mechanical Engineering is the same.

The programs for the Sophomore, Junior, and Senior Years in the Electrical Engineering Curriculum are given on page 167. The programs for the Sophomore, Junior, and Senior Years in the Mechanical Engineering Curriculum are given on page 168.

COLLEGE OF TECHNOLOGY

ELECTRICAL ENGINEERING

	First Semester Credits	Second Semester Credits
SOPHOMORE YEAR		
P. E. 33, 34	$\frac{1}{2}$	$\frac{1}{2}$
Mil. Sci. 3-4	$1\frac{1}{2}$	$1\frac{1}{2}$
C. E. 9, <i>Surveying</i>	2	
E. E. 1-2, <i>Electrical Engineering</i>	3	4
Math. 7-8, <i>Calculus</i>	3	3
M. E. 3, <i>Machine Drawing</i>	2	
M. E. 4, <i>Kinematics</i>		3
Phys. 21-22, <i>General Physics</i>	6	6
	18	18
JUNIOR YEAR		
Econ. 1-2, <i>Economics</i>	3	3
E. E. 13, <i>Circuit Theory</i>	2	
E. E. 14, <i>Electronics</i>		3
E. E. 15, 16, <i>A. I. E. E. Required</i>		
E. E. 23-24, <i>Electrical Laboratory</i>	2	2
E. E. 53-54, <i>Electrical Engineering</i>	3	3
M. E. 9-10, <i>Mechanics</i>	3	4
M. E. 25-26, <i>Heat Power Engineering</i>	3	4
M. E. 27, <i>Mechanical Laboratory</i>	2	
	18	19
SENIOR YEAR		
C. E. 23, <i>Fluid Mechanics</i>	3	
E. E. 12, <i>Illumination</i>		2
E. E. 17, 18, <i>A. I. E. E. Required</i>		
E. E. 25, <i>Electrical Laboratory</i>	4	
E. E. 55, <i>Electrical Engineering</i>	3	
E. E. 57, <i>Electronics</i>	3	
*E. E. 58, <i>Radio and Wire Communication</i>		4
*E. E. 60, <i>Advanced Circuit Theory</i>		4
*E. E. 76, <i>Electrical Laboratory</i>		4
*E. E. 78, <i>Advanced Electronics</i>		4
Engl. (23), <i>Writing of Technical Reports</i>		2
M. E. 65, <i>Engineering Economy</i>	3	
M. E. 66, <i>Industrial Management</i>		3
Phys. 64, <i>Electrical Measurements</i>		3
Approved non-technical elective. Optional	1-3	3
	17-19	16

*E. E. 58, 60, 76, 78 are elective courses. Seniors are expected to enroll in a minimum of 14 credits chosen from the required and elective courses of the second semester, not including the non-technical elective.

UNIVERSITY OF NEW HAMPSHIRE

MECHANICAL ENGINEERING

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
SOPHOMORE YEAR		
P. E. 33, 34	$\frac{1}{2}$	$\frac{1}{2}$
Mil. Sci. 3-4	$1\frac{1}{2}$	$1\frac{1}{2}$
C. E. (9), <i>Surveying</i>		2
Math. 7-8, <i>Calculus</i>	3	3
M. E. 3, <i>Machine Drawing</i>	2	
M. E. 4, <i>Kinematics</i>		3
M. E. 5-6, <i>Mechanical Laboratory</i>	1	2
M. E. S17, <i>Machine Shop</i>	2	
Phys. 21-22, <i>General Physics</i>	6	6
	<hr/> 16	<hr/> 18
JUNIOR YEAR		
Econ. 1-2, <i>Economics</i>	3	3
C. E. 23, <i>Fluid Mechanics</i>		3
E. E. 37-38, <i>Electrical Machinery</i>	4	4
M. E. 7-8, <i>Mechanics</i>	4	4
M. E. 13, <i>Elementary Metallurgy</i>	2	
M. E. 23, 24, <i>Thermodynamics</i>	3	3
M. E. 29, 30, <i>Mechanical Laboratory</i>	2	1
M. E. 59, 60, <i>A. S. M. E.</i>		
	<hr/> 18	<hr/> 18
SENIOR YEAR		
Approved elective	3	3
Engl. 23, <i>Writing of Technical Reports</i>		2
M. E. 15, 16, <i>Machine Design</i>	3	3
M. E. 17, <i>Heat Treatment Laboratory</i>	1	
M. E. 39, <i>Heating and Ventilating</i>	2	
M. E. 52, <i>Mechanical Laboratory</i>		2
M. E. 53, 54, <i>Power Plants</i>	2	3
M. E. 55-56, <i>Internal Combustion Engines</i>	3	3
M. E. 65, <i>Engineering Economy</i>	3	
M. E. 66, <i>Industrial Management</i>		3
M. E. 61, 62, <i>A. S. M. E.</i>		
	<hr/> 17	<hr/> 19

COLLEGE OF TECHNOLOGY

TECHNOLOGY PHYSICS

	<i>First Semester Credits</i>	<i>Second Semester Credits</i>
FRESHMAN YEAR		
P. E. 31, 32	$\frac{1}{2}$	$\frac{1}{2}$
Mil. Sci. 1-2	$1\frac{1}{2}$	$1\frac{1}{2}$
Chem. 3, 4, <i>General Chemistry</i>	4	4
Engl. 1-2, <i>Freshman English</i>	3	3
Math. 11-14, <i>Algebra, Analytical Geometry</i>	3	3
Math. 13-16, <i>Trigonometry, Calculus</i>	3	3
M. E. 1, 2, <i>Engineering Drawing</i>	2	2
M. E. S1, S2, <i>Elementary Shop Practice</i>	2	2
	<hr/> 19	<hr/> 19
SOPHOMORE YEAR		
Econ. 1-2, <i>Economics</i>	3	3
P. E. 33, 34 (<i>For men</i>)	$\frac{1}{2}$	$\frac{1}{2}$
Mil. Sci. 3-4	$1\frac{1}{2}$	$1\frac{1}{2}$
Math. 17-18, <i>Calculus</i>	3	3
Ger. 1-2, <i>German</i>	3	3
Phys. 21-22, <i>General Physics</i>	6	6
	<hr/> 17	<hr/> 17
JUNIOR YEAR		
Approved Elective	7	4
Math. 51, 52, <i>Advanced Calculus, Diff'l. Eq'ns.</i>	3	3
Phys. 81, <i>Optics</i>	4	
Phys. 82, <i>Heat</i>		4
Phys. 83-84, <i>Theory of Electricity & Magnetism</i>	4	4
Phys. 86, <i>Advanced Mechanics</i>		3
	<hr/> 18	<hr/> 18
SENIOR YEAR		
Approved Elective	6	10
Phys. 91-92, <i>Modern Physical Theories</i>	3	3
Phys. 93-94, <i>Theoretical Physics</i>	3	3
Phys. 95-96, <i>Advanced Laboratory</i>	2	2
Phys. 97, <i>Electrical Discharge Through Gases</i>	4	
	<hr/> 18	<hr/> 18

GRADUATE SCHOOL

HERMON L. SLOBIN, *Dean*

OBJECTIVES

The Graduate School is designed to meet the needs of superior students for a more advanced training than may be obtained in an undergraduate curriculum. Graduate work is offered by competent members of the University Departments of instruction and research. Administrative functions and supervision of advanced students are delegated to the Dean of the Graduate School and the Committee on Graduate Study.

The Graduate work of students in education is designed to supplement their undergraduate studies in such manner as to prepare them most effectively for the professions of elementary and secondary school teaching, and of public school administration and supervision.

Graduate Students are defined as those who meet the requirements for admission to the Graduate School (see Rules and Regulations under Admission) and are registered for *more than half their program for graduate credit*.

ADMISSION

Admission to the Graduate School may be granted to graduates of all colleges and universities of approved standing provided their undergraduate records are satisfactory. Before entering upon graduate work in any division the applicant must present evidence to the effect that he has had the necessary prerequisite training that will enable him to pursue with profit the courses desired. A candidate for admission who intended to work for a Master's Degree must have had an undergraduate average of not less than $2\frac{1}{2}$ honor points or the equivalent, throughout his entire program of study. This requirement may be waived upon petition to the Executive Council in the case of a mature college graduate who gives evidence of adequate professional experience or advanced study since graduation from an undergraduate program. Admission to the Graduate School does not imply admission to candidacy for the degree. A candidate for admission who does not intend to be a candidate for a degree may enroll in the Graduate School for any courses for which he has had sufficient preparation. No Graduate Student is admitted to candidacy for a degree until he has been in residence a sufficient time to enable his instructors to judge his ability to carry on graduate work. Generally,

GRADUATE SCHOOL

this period of time shall be not less than one semester or two summer sessions. Admission to candidacy for a degree will be determined by the Executive Council.

REGISTRATION

A student desiring to register for Graduate study must submit to the Dean of the Graduate School the official application for admission to Graduate study. Blanks for this purpose may be obtained from the Dean's office. A student's program of courses must be approved by his Adviser and the Dean.

TUITION*

The tuition fee is \$160 a year for residents of New Hampshire and \$360 a year for non-residents.

Any student registering for 8 credits or more shall pay the full semester tuition. Any student registering for less than 8 credits shall pay \$6.00 per credit hour, if a resident; and \$13.00, if a non-resident. A Graduate Assistant registering for 9 credits or less shall pay \$3.00 per credit hour, and if registered for more than 9 credits, shall pay \$80 per year.

DEGREES

Requirements.—The Graduate School will grant degrees as follows: Master of Arts, Master of Science, and Master of Education.

Credits.—For the degree in arts and in science, 30 semester credits must be earned. Of these, at least 18 must be taken in courses offered by the major department, and any major department may prescribe for its own students the subjects in which the remaining credits are to be earned. *For the degree of Master of Education see departmental statement.*

Residence.—A minimum of one full academic year, or five summer sessions of six weeks each will be required of all candidates for the Master's Degree. If the work is taken in the regular academic year no exception to this residence requirement will be permitted.

If the work is taken in summer sessions in this University, the following variations are permissible: The time occupied in earning 6 credits elsewhere in an approved graduate school may be accepted in lieu of one summer session of residence. These regulations make it possible to complete the residence requirements in (four) summer sessions.

*For tuition rates in Summer School see Summer Sessions Issue of the University Bulletin Series.

UNIVERSITY OF NEW HAMPSHIRE

If the candidate offers acceptable credits earned at this University in Saturday courses, or in extra-mural courses, two semester courses of such work will be counted as the equivalent of one summer session in residence.

Examination.—A final oral or written examination may be demanded by any department of its candidates for the Master's Degree, but the details of the departments' requirements in this matter must be approved by the Executive Council.

Grades.—The passing grade in the Graduate School is C. Candidates for a degree must earn a grade of B, or better, in three-fourths of the work for which a letter grade is given.

Graduate Credits.—Graduate credits may be earned only in courses numbered 51 to 199, but they will not be given in any courses so numbered which admit Freshmen or Sophomores. For any Master's Degree, except that of Ed.M., the candidates must earn not less than 12 semester credits in the courses primarily for Graduate Students, numbered 101-199, or thesis, and not more than 10 semester credits in courses outside of those offered by his "major" department.

Graduate Credits for Senior Students.—Senior students must register in the Graduate School for any work for which they may subsequently apply for graduate credit.

Transfer credits.—A candidate for any Master's Degree may present for credit a maximum of 6 credits earned elsewhere at an approved graduate school.

Thesis.—A thesis will be required of all candidates for the Master's Degree in Arts and in Science and may be submitted by the candidates for the Master's Degree in Education. The number of *thesis credits* may vary from 6 to 10, subject to the approval of the major department. (For *thesis regulations* see Bulletin of the Graduate School.)

Special Requirements.—The student must meet the special requirements of his major department, and his program must be approved by his adviser who will be designated by the Dean. (For the special Departmental Requirements see Bulletin for the Graduate School.)

HONORARY FELLOWSHIPS FOR VISITING SCHOLARS

Properly qualified scholars who may desire temporarily the privileges of the library and research facilities of the University and who are not candidates for a degree may, upon recommendation of the Dean of the Graduate School and the approval of the President of the University, be appointed Honorary Fellows without stipend. Honorary Fellows shall not be required to pay any charges except, possibly, the cost of unusually expensive supplies or equipment.

GRADUATE SCHOOL

ASSISTANTSHIPS AND SCHOLARSHIPS

Graduate Students may be employed as Graduate Assistants for (a) Research, (b) Teaching, and (c) Service, at \$60, \$80, and \$100 per month, depending upon the student's program of hours of study and hours of service. Inquiries regarding Assistantships should be addressed to the Head of the Department concerned.

A limited number of superior students who are legal residents of New Hampshire are awarded exemption from tuition. These awards are subject to the maintenance of a high scholarship record in the Graduate School and may be revoked at the end of any semester if the student does not merit such exemption for the subsequent semester.

SPECIAL REGULATIONS FOR VETERANS

Men and women released from the Armed Forces will be permitted to transfer not more than 12 of the 30 credits required for a degree under the following conditions:

1. The credits must be transferred from approved graduate schools or other approved official agencies.
2. In each case, transferred credits will be accepted and evaluated by a committee consisting of the Dean of the Graduate School, the Dean of Student Administration, and the Chairman of the Department concerned.
3. The remaining credits must be earned in residence.

INFORMATION

For detailed information concerning admission, requirements for degrees, courses open to graduate students, and other matters not covered above, interested persons are invited to write to the Dean of the Graduate School.

UNIVERSITY OF NEW HAMPSHIRE

DESCRIPTION OF COURSES

(Departments Alphabetically Arranged)

The title of the course is given in small capital letters. The numeral designates the particular course. Odd numerals indicate courses normally offered in the first semester; even numerals indicate courses normally offered in the second semester. Numerals enclosed in parentheses indicate that a course is repeated in the semester following. Thus course 1 (1) is offered in the first semester and is repeated in the second semester.

Courses numbered 1-50 cannot be counted for graduate credit. Courses numbered 51-100 are for Juniors, Seniors, and Graduate Students. They are not open to Freshmen and Sophomores.

Following the title is the course description and the name of the instructor.

The next paragraph gives the following information in the order indicated: (1) prerequisites, if any; (2) the number of hours of recitations or laboratory periods required each week; (3) the number of semester credits the course will count in the total required for graduation. Lectures and recitations are fifty-three minutes in length. Laboratory periods are usually two and one-half hours in length.

Abbreviations have been employed to indicate the number of hours of work required of students in lecture, recitation, and laboratory, and the number of credits given for satisfactory completion of each course. These abbreviations should be interpreted as follows:

Cr.	Semester hour credit
Lab.	Laboratory
Lec.	Lecture
Prereq.	Prerequisite
Rec.	Recitation

All courses (unless otherwise marked) are open to students who have passed the prerequisites.

An elective course will be given only when there is a minimum of five students registered therefor.

If the numerals designating a course running through both semesters are connected by a hyphen, the first semester, or its equivalent, is a prerequisite for the second semester. If the numerals are separated by a comma, properly qualified students may take the second semester without having had the first.

Students must register for the number of credits or within the range of credits shown in the Catalogue description of a course.

AGRICULTURAL ECONOMICS

ACCOUNTING

(See ECONOMICS, page 198)

AGRICULTURAL AND BIOLOGICAL CHEMISTRY

THOMAS G. PHILLIPS, *Professor*; STANLEY R. SHIMER, *Associate Professor*; HELEN J. PURINTON, *Assistant Professor*; ARTHUR E. TEERI, *Assistant Professor*; MARGARET E. LOUGHLIN, *Assistant*.

1. ORGANIC AND BIOLOGICAL CHEMISTRY. An introduction to Organic Chemistry and a brief survey of Biological Chemistry. Mr. Shimer, Mr. Phillips, Miss Purinton. Prereq.: Chem. 2. 3 lec.; 2 lab.; 5 cr.

2. PLANT CHEMISTRY. The chemistry of plant growth, soils, and fertilizers. Mr. Phillips. Prereq.: Agr. Chem. 1 or its equivalent. 2 lec.; 1 lab.; 3 cr.

4. ANIMAL NUTRITION. The chemistry of animal nutrition. Mr. Shimer. Prereq.: Agr. Chem. 1 or its equivalent. 2 lec.; 1 lab.; 3 cr.

6. CHEMISTRY OF FOOD AND NUTRITION. The chemistry of food materials and of digestion, absorption, metabolism, and excretion. Miss Purinton. Prereq.: Agr. Chem. 1 or its equivalent. 2 lec.; 1 lab.; 3 cr.

51-52. PHYSIOLOGICAL CHEMISTRY. The chemistry of fats, carbohydrates, and proteins; colloids, enzyme action, digestion, metabolism, and excretion. The qualitative and quantitative examination of blood and urine. Mr. Shimer, Mr. Teeri. Prereq.: Satisfactory preparation in Organic Chemistry and Quantitative Analysis. 3 lec.; 2 lab.; 5 cr.

53-54. AGRICULTURAL ANALYSIS. A study of the methods of analysis of soils, fertilizers, feeding stuffs, and other products important in Agriculture. Mr. Phillips, Mr. Shimer. Prereq.: Satisfactory preparation in Organic Chemistry and Quantitative Analysis. 1 lec.; 3 lab.; 4 cr. (Given in alternate years; offered in 1948-1949.)

COURSES PRIMARILY FOR GRADUATE STUDENTS

101, 102. ADVANCED BIOCHEMISTRY. The preparation, composition, and analysis of carbohydrates, fats, and proteins. Discussions and laboratory. Mr. Phillips and Mr. Shimer. Prereq.: Satisfactory preparation in Analytical, Organic, and Biological Chemistry. 4 cr.

103, 104. SPECIAL PROBLEMS. Conferences and library and laboratory work on special phases of chemistry in its relation to agriculture and biology. Mr. Phillips, Mr. Shimer, Miss Purinton, Mr. Teeri. Prereq.: Satisfactory preparation in Analytical, Organic, and Biological Chemistry. Subject matter and credits arranged.

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AGRICULTURAL ECONOMICS

HARRY C. WOODWORTH, *Professor*; HAROLD C. GRINNELL, *Professor*.

7. FARM ACCOUNTING. The principles of double-entry accounting applicable to the farm business. Mr. Grinnell. Elective for Juniors and Seniors in Agriculture. 1 lab.; 2 cr.

11. ECONOMICS OF THE AGRICULTURAL INDUSTRY. Production and distribution problems of the agricultural industry, the nature of farming costs, agricultural prices, farm credit, land utilization, Federal and State action programs, and agricultural policy. Mr. Woodworth. Elective for Juniors and Seniors. 3 lec.; 3 cr.

14. FARM MANAGEMENT. Business aspects concerned with the organization and management of a farm as a business unit. Practical problems of reorganization will be carried out on at least two near-by farms. Mr. Grinnell. Elective for Seniors in Agriculture. 2 lec.; 1 lab.; 3 cr.

52. CO-OPERATIVE BUSINESS. Stress is placed on the organizational, legal, and financial problems of farmers' business corporations engaged in buying and selling. Selected problems of general agricultural marketing are integrated with the course content. Mr. Grinnell. Elective for Juniors and Seniors. 3 lec.; 3 cr.

56. AGRICULTURAL MARKETING. The market structure responsible for the distribution of agricultural products will be reviewed briefly. Primary emphasis will be placed on the theory of price determination, public and private administration of prices, and analysis of agricultural prices. 3 lec.; 3 cr.

60. AGRICULTURAL POLICY. Public policies involving conservation and agriculture will be studied and appraised. Production and price control, land-use problems, soil conservation, forest regulation, the objectives and effect of various action programs. Mr. Woodworth. Elective, subject to approval of instructor. 3 lec.; 3 cr.

67, 68. SPECIAL PROBLEMS.. Special assignments in readings and problems to satisfy students' needs. Mr. Woodworth, Mr. Grinnell. 1 to 3 cr.

COURSES PRIMARILY FOR GRADUATE STUDENTS

101-102. ADVANCED FARM MANAGEMENT. Principles and problems of farm management as applied to the organization and operation of individual farms. 3 cr.

103. ADVANCED AGRICULTURAL PRICES. The history of agricultural

AGRICULTURAL ECONOMICS

prices and the major factors determining prices. Methods of price analysis. Assigned readings and conferences. 3 cr.

106. ADVANCED LAND UTILIZATION AND AGRICULTURAL POLICY. An appraisal of national and local policies and proposed action programs affecting American agriculture. Assigned readings and conferences. Mr. Woodworth. 3 cr.

181-182. READING AND RESEARCH IN AGRICULTURAL ECONOMICS. With the advice and consent of the instructor, a student prepared by training and experience to do independent work may register for a reading and research course. The student will undertake assigned problems and readings under the guidance of the instructor.

AGRICULTURAL ENGINEERING

GEORGE M. FOULKROD, *Associate Professor*; PAUL A. GILMAN, *Instructor*.

5-6. BASIC APPLICATIONS. The principles and methods used in the solution of farm problems. Land measurement, drainage, erosion control, clearing, farmstead planning, elementary mechanics, and basic structures are considered during the first semester; water supply, irrigation, sanitation, power, machinery, and electrification during the second semester. Mr. Foulkrod. 1 rec.; 1 lab.; 2 cr.

17, 18. FARM SHOP. The selection, care and use of tools needed for modern farm operation and maintenance, with practice in basic tool operations. The development of skills in handling tools for maintenance and construction work on the farm. Mr. Gilman. 2 lab.; 2 cr.

19-20. THE AGRICULTURAL ENGINEERING THESIS. An original treatise dealing with resident research, field problems, commercial investigation, or some combination of these will be presented by the student. The student must evidence ability to analyze a problem and express his findings on paper. Progress reports must be submitted each week. 2 cr.

22. FARM POWER APPLICATIONS. The application of power to modern farm practices with emphasis on gasoline engines, tractors, electric motors, wind and water power units. Mr. Foulkrod. 1 lec.; 1 lab.; 2 cr. (Alternate years; offered in 1948-1949.)

23. FARM MACHINERY AND EQUIPMENT. A study of modern farm equipment with emphasis on its adaptability to New England farms. Mr. Foulkrod. 1 lec.; 1 lab.; 2 cr. (Alternate years; not offered in 1948-1949.)

UNIVERSITY OF NEW HAMPSHIRE

24. FARM STRUCTURES. Lectures, drafting room practice, and field studies of the design, construction, and maintenance of all farm structures. Mr. Foulkrod. 1 lec.; 1 lab.; 2 cr. (Alternate years; not offered in 1948-1949.)

A.E. 25, 26, 27, 28. STUDENT BRANCH OF AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS. An organization of Junior and Senior students. Student officers assume responsibility for conducting one meeting each week with suitable technical programs by members and others. Discussion of material and criticism of student contributions will be led by the instructor. Delivery, subject-matter and descriptive terms are subjects of appraisal. Required of Juniors and Seniors in A.E. No credit.

37. HOME BUILDING. The principles involved in selecting a home which is best fitted to the needs, desires, and activities of the whole family group are considered. A study of existing homes and published plans is supplemented by practice in original design, through simple sketch plans. Mr. Foulkrod. 2 lec.; 1 lab.; 3 cr.

38. HOUSEHOLD MECHANICS. The application of engineering principles and practices to the problem of making the home more comfortable, convenient, and livable is covered in theory and demonstration. Electrical appliances, water supply, sewerage disposal, gas, telephone, and fuels are considered. The selection, care, and maintenance of cooking, heating, refrigeration, cleaning, and other equipment are studied. Mr. Foulkrod. 2 lec.; 1 lab.; 3 cr.

AGRONOMY

FORD S. PRINCE, *Professor*; LEROY J. HIGGINS, *Associate Professor*; LOUIS T. KARDOS, *Assistant Professor*; REESHON FEUER, *Assistant Professor*.

1. SOILS. The nature and properties of soils; fundamental physical, chemical, and biological processes and characteristics of productive soils. Mr. Higgins. 3 lec.; 1 lab.; 4 cr.

4. FERTILIZERS AND FERTILITY. The manufacture and use of fertilizers, the production, composition, and care of farm manure and the relationship to crop response and soil fertility. Mr. Prince. 2 lec.; 1 lab.; 3 cr.

10. CROP PRODUCTION. Production of agronomic crops, distribution, choice, growth processes, cropping practices, seed beds, care, improvement, and breeding. Mr. Higgins. 2 lec.; 1 lab.; 3 cr.

17. SEED TESTING. Official method of analysis of agricultural seeds for purity and germination, the identification of seeds, and the technique used in weighing, germinating, counting, and recording. Mrs.

AGRONOMY

Sanborn in charge. Prereq.: Bot. 1 and permission of instructor. Hours arranged; 1 lab.; 1 cr.

18. POTATOES AND CEREAL CROPS. Potatoes and potato production in the Northeast; cereal grains such as corn, oats, and barley. Mr. Higgins. Prereq.: Agron. 1, 4, and 10 or permission of instructor. 2 lec.; 1 lab.; 3 cr. (Alternate years; not offered in 1948-1949.)

20. FORAGE AND PASTURE CROPS. Forage grasses and legumes, forage production, pasture crops and swards, and pasture management practices. Mr. Higgins. Prereq.: Agron. 1, 4, and 10 or permission of instructor. 2 lec.; 1 lab.; 3 cr. (Alternate years; offered in 1948-1949.)

57. SOIL PHYSICS. The physical constitution and colloidal properties of soils; their measurement and relation to structure, water movement, aeration and temperature in soils. Mr. Kardos. Prereq.: Agron. 1, 4, and Phys. 1. 2 lec.; 1 lab.; 3 cr. (Alternate years; not offered in 1948-1949.)

58. SOIL CLASSIFICATION AND MAPPING. The origin, morphology, classification, and mapping of soils. Relationships of the Great Soil Groups of the world to crop production. Special emphasis is devoted to the soils of New Hampshire. Mr. Feuer. Prereq.: Agron. 1 and other courses at the discretion of the instructor. 2 lec.; 1 lab.; 3 cr. (Alternate years; not offered in 1948-1949.)

59. SOIL CHEMISTRY. A study of the methods of evaluating nutrient levels in soils and of principles underlying the liberation, absorption, and fixation of nutrient elements in soils. Mr. Kardos. Prereq.: Agr. Chem. 1, 2, and Agron. 1, 4, 2 lec.; 1 lab.; 3 cr. (Alternate years; offered in 1948-1949.)

60. SOIL CONSERVATION. The causes and effects of soil erosion. Cropping systems, fertilizer practices and structural devices used in erosion control. Mr. Kardos. Prereq.: Agron. 1, 4, 10. 1 lec.; 2 lab.; 3 cr. (Alternate years; offered in 1948-1949.)

71, 72. AGRONOMY SEMINAR. Library and reference work on special phases of soil and crop problems. Practice in looking up literature and in preparation of reports and abstracts. Mr. Prince and staff. Prereq.: Agron. 1, 4, 10. Elective for Seniors. 1 to 3 cr.

COURSES PRIMARILY FOR GRADUATE STUDENTS

101, 102. AGRONOMY. Studies in Comparative Agronomy. The forage crops of the temperate zone. Origin and classification of the varieties grown. Germination, growth, and maturation of crops; modifications induced by climate and management. Mr. Prince. Prereq.: A major in Agronomy or its equivalent. Conferences, laboratory, and field work. Hours to be arranged. 3 cr.

UNIVERSITY OF NEW HAMPSHIRE

103. **ADVANCED SOIL FERTILITY.** Discussion of theories concerning nutrient availability and fixation. Use of biological methods for major and minor nutrients assays. Principles of experimental design in field plots. Mr. Kardos. Prereq.: Agron. 59 and Agr. Chem. 54 or Chem. 22. Lectures, discussions, problem work in the laboratory and greenhouse. 3 cr.

104. **ADVANCED SOIL CHEMISTRY.** Physical chemistry of soils. Soil colloidal phenomena. Anion and cation exchange mechanisms. Theories of swelling. Crystallographic properties of the clay colloids. The nature of soil acidity. Oxidation-reduction phenomena in soils. Mr. Kardos. Prereq.: Agron. 59 and Agr. Chem. 54 or Chem. 22 (Chem. 82 or 84 recommended). Lectures, discussions and problem work in the laboratory. 3 cr.

ANIMAL HUSBANDRY

LORING V. TIRRELL, *Professor*; FRED E. ALLEN, *Assistant Professor*.

2. **TYPES AND MARKET CLASSES OF LIVESTOCK.** Origin, history, development, characteristics, and adaptability of the different types of horses, cattle, sheep, and swine, with practice in judging. Mr. Tirrell. 2 lec.; 1 lab.; 3 cr.

11. **LIVESTOCK JUDGING.** The principles and practice of judging horses, beef cattle, sheep, and swine. It includes trips to some of the best New England breeding establishments and is required of candidates for judging teams. Mr. Tirrell. 1 lab.; 1 cr.

13. **FEEDS AND FEEDING.** The character, composition, and digestibility of feed stuffs and the principles and methods of feeding different kinds of farm animals. Mr. Tirrell. 3 lec.; 3 cr.

14. **ADVANCED LIVESTOCK JUDGING.** A continuation of Animal Husbandry 11. It serves as a basis for the selection of a livestock team for competition such as held at the Eastern States Exposition and the International at Chicago. Mr. Tirrell. Prereq.: Animal Husbandry 11. 1 lab.; 1 cr.

15. **SYSTEMATIC ANATOMY.** The general anatomy and physiology of domestic animals. Dr. Allen. 3 lec.; 3 cr.

16. **ANIMAL DISEASES.** The prevention, control, and treatment of the bacterial and parasitic diseases of domestic animals. Dr. Allen. Prereq.: A.H. 15. 3 lec.; 3 cr.

18. **MEAT AND ITS PRODUCTS; LIVESTOCK MARKETS.** A study of meat, farm slaughter, curing and identification of cuts; livestock, markets, stockyards, and transportation, with occasional trips to slaughter houses and packing plants. Mr. Tirrell. 1 lec.; 1 lab.; 2 cr.

ANIMAL HUSBANDRY

19. MANAGEMENT OF HORSES AND BEEF CATTLE. Selection, feeding, breeding, management, and preparation for the show ring of horses and beef cattle with special reference to New England conditions. Mr. Tirrell. 2 lec.; 1 lab.; 3 cr.

20. SHEEP AND SWINE HUSBANDRY. Selection, breeding, feeding, management, and preparation for the show ring of sheep and swine, with special reference to New England conditions. Mr. Tirrell. 2 lec.; 1 lab.; 3 cr.

51. ANIMAL BREEDING. The principles and practices of breeding farm animals, including cross-breeding, in-breeding, selection, inheritance, breed analysis, reproductive efficiency, fertility and sterility. Mr. Tirrell. 3 lec.; 3 cr.

52. ANIMAL HUSBANDRY SEMINAR. Library and reference work and preparation of papers on various Animal Husbandry subjects of timely importance. Mr. Tirrell. 1 to 3 cr.

COURSES PRIMARILY FOR GRADUATE STUDENTS.

105. PROBLEMS IN ANIMAL BREEDING. Studies in practical breeding problems with beef and dual-purpose cattle, sheep, horses, and hogs. The genetic principles important to successful livestock production will be emphasized. Mr. Tirrell. Prereq.: A major in Animal Husbandry or Dairy Husbandry. 2 lec.; 1 lab.; 3 cr.

106. MEATS, LIVESTOCK MARKETS AND PRODUCTS. The essential factors in meat selection, cutting, curing, and smoking; study and discussion relative to the problems of livestock marketing, and the procedure in the large central markets. Trips are taken to various packing plants. Mr. Tirrell. Prereq.: A major in Animal Husbandry or Dairy Husbandry. 2 lec.; 1 lab.; 3 cr.

THE ARTS

GEORGE R. THOMAS, *Associate Professor*; VERA E. MOULTON, *Assistant Professor*; EDWIN SCHEIER, *Instructor*; WESLEY F. BRETT, *Instructor*; WENDOVER NEEFUS, JR., *Instructor*; DORIS F. WILKINS, *Instructor*; CORNELIA SCHOOLCRAFT, *Instructor*; D. GENEVIEVE BREDO, *Instructor*.
MILDRED THOMAS, *Assistant*.

ROBERT B. KERR, M.A., M.D.; LOUISA M. NORTON, A.B., M.D.; ANNA L. PHILBROOK, A.B., M.D., M.D.C.M.; THOMAS F. REID, M.D.; ROBERT R. RIX, B.A., F.A.C.S.; URSULA J. SANDERS, A.B., M.D.; JOHN S. WHEELER, A.B., M.D., M.P.H.; LESTER R. WHITAKER, M.D.; *Visiting Lecturers in Clinical Subjects*.

CRAFT COTTAGE.—Devoted to the pursuit of a variety of crafts suitable for vocational, avocational and leisure-time hobbies. Classes open to all students; laboratories scheduled at various times throughout the week to meet the differences in individual programs.

UNIVERSITY OF NEW HAMPSHIRE

STUDENT WORKSHOP.—An experimental arts laboratory located in Hewitt Hall, open to any student in the University, whether or not enrolled in art courses. Equipped with woodworking tools and machinery, printing-presses, silk screen printing equipment, air brush, facilities for block printing, model making, making of decorations, repairing of skis and other sports' equipment, woodcarving, plastics, and other hobby interests. Supervised by Mr. Brett.

All laboratory courses listed in this section are limited in enrollment. Students should consult the instructor in charge before registering.

In those courses where the students retain finished products, they pay the cost of materials used.

GENERAL COURSES IN THE ARTS

3, 4. **CRAFTS.** A course offering opportunity to become acquainted with elementary work in a number of crafts such as leatherwork, chip carving, weaving, jewelry, Viennese stenciling, embroidery, and others. Mrs. Bredo. Elective by permission only. 1-3 lab.; 1-3 cr.

5, 6. **CRAFTS.** A continuation of Arts 3 or 4 covering other crafts, or more advanced work. Mrs. Bredo. Elective by permission only. Prereq.: Arts 3 or 4. 1-3 lab.; 1-3 cr.

11, (11). **MODELING.** Modeling in relief and the round figure. An introduction to ceramic sculpture and to the processes of casting in plaster and papier-mâché. For students in the Occupational Therapy Curriculum, a project in the design and construction of hand puppets, marionettes, and shadow puppets will be assigned. Mr. Scheier. 2 lab.; 2 cr.

15, 16. **CERAMICS (Pottery).** Design and construction. Studio practice in throwing, casting, modeling, decorating, glazing, and firing of pottery, tiles, and figures. Modeling in ceramic clay and plasticine. Study of casting problems. Mr. Scheier. 2-3 lab.; 2-3 cr.

17, 18. **CERAMICS (Pottery).** A further study of design and construction, with special emphasis on decoration and the preparation and application of glazes. Mr. Scheier. Prereq.: Arts 15, 16. 2-3 lab.; 2-3 cr.

20. **ELEMENTARY DRAFTING.** Elementary drafting procedures, including lettering and use of instruments. Study of architectural symbols. Interpretation of typical hotel plans and statistical data by graphical representation. 2 lab.; 2 cr. For Hotel Administration students only.

23. **ELEMENTARY DRAWING AND DESIGN.** Studio exercises in graphical representations designed to stimulate and develop the student's expression of creative thought. Original ideas will be guided through

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the process of development by criticism and suggestion only. Mrs. Schoolcraft and Mr. Thomas. 2-3 lab.; 2-3 cr.

24. **ELEMENTARY DRAWING AND DESIGN.** Elementary drawing in various media from casts, still-life, and nature, aiming at the stimulation and development of creative thought through the study of fundamental forms. Lettering, block printing, and color. Mrs. Schoolcraft and Mr. Thomas. 2-3 lab.; 2-3 cr.

25, 26. **ADVANCED DRAWING AND DESIGN.** Advanced studio exercises in various media. Original compositions, still life and life drawing, composition, proportion, perspective, and the expression of mass by means of line and simple light and shade. Theories of color, scientific and aesthetic, and their application. Outdoor sketching. Mrs. Schoolcraft and Mr. Thomas. 2-3 lab.; 2-3 cr.

29, 30. **ADVANCED PAINTING.** A general advanced study of special types, depending upon the student's previous training. A variety of studio work under individual supervision and criticism. This course may be taken a second time. Mr. Thomas. Elective by permission only. Credits to be arranged.

31, 32. **INTRODUCTION TO THE ARTS.** A broad historical survey of man's creative efforts in their relation to contemporary cultural and social movements, presented as a background for interpreting the place of the arts in individual and community life of today. Illustrated lectures with assigned readings. Mr. Thomas. For Sophomores, Juniors, and Seniors. 3 lec.; 3 cr.

33. **SURVEY OF EUROPEAN ART.** The development of art, especially painting, in Europe from the Renaissance to the present, with particular emphasis on French art of the nineteenth and twentieth centuries. Illustrated lectures, assigned reading, and reports. For Sophomores, Juniors, and Seniors. Not offered 1948-1949. 3 lec.; 3 cr.

35, (35). **STAGECRAFT.** A laboratory course in the technical phases of play production, including a study of the design of scenery, methods of execution and lighting. Practice in design, construction, painting and lighting of scenery; practical experience in the handling of properties, manipulation of scenery, lighting and mechanical effects. This course may be taken a second time, but no more than one semester credit may be earned. Mr. Brett. $\frac{1}{2}$ —1 cr.

39, (39). **ELEMENTARY PHOTOGRAPHY.** The theory and technique of photography, covering camera operation, developing, printing and enlarging. Projects stress imaginative solutions to problems concerning portrait, campus life, fashion, and advertising. Mr. Neefus. Open to Sophomores, Juniors, and Seniors with permission of the instructor. 1 lec.; 2 lab.; 3 cr. Laboratory fee: \$7.50.

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40. **ADVANCED PHOTOGRAPHY.** Each student will be assigned a special project, or part of a class project upon which he will do considerable experimenting and research during the semester, *e.g.*, color, advertising, portraits. A term paper will be required including a series of photographs representative of his progress. Permission of the instructor. Mr. Neefus. 1 rec.; 2 lab.; 3 cr.

Arts 43. **HISTORIC COSTUME.** A study of the costume changes from the primitive to the present and something of the historical events that influenced such changes. Miss Moulton. 3 lec. or rec.; 3 cr.

Arts 44. **COSTUME DESIGN.** Adaptation of period costume to modern use, including designing and making garments for individual students. Miss Moulton. Prereq.: Arts 43. 2 lab.; 2 cr.

Art-Education (Art-Ed) 91. **PROBLEMS OF TEACHING ART IN ELEMENTARY SCHOOLS.** 2 rec.; 1 lab.; 3 cr.

Arts-Education (Art-Ed) 92. **PROBLEMS OF TEACHING ART IN SECONDARY SCHOOLS.** 2 rec.; 1 lab.; 3 cr.

Education-Art (Ed-Art) 94. **SUPERVISED TEACHING IN SECONDARY SCHOOL ART.** Prereq.: Art-Ed 92. One semester of Supervised Teaching. An assigned paper will be required at the conclusion of the semester's work. 12 cr.

Selection from the following courses offered by several departments within the University may, with the consent of the Head of the Department, be counted toward a major program in the Arts:

CLOTHING CONSTRUCTION. See HOME ECONOMICS.

DOMESTIC ARCHITECTURE. See B-C.E.

ELEMENTARY LANDSCAPE GARDENING. See HORTICULTURE.

FLORAL ARRANGEMENT. See HORTICULTURE.

FURNITURE AND TEXTILES. See HOME ECONOMICS.

HOME BUILDING AND FURNISHING. See AGRICULTURAL ENGINEERING and HOME ECONOMICS.

TEXTILES. See HOME ECONOMICS.

For courses in Music, Dramatic Art, and Dancing, see Departments of Music, English, Physical Education for Women.

The Department promotes on the Campus a series of exhibitions and lectures treating the arts. Visits to near-by museums and points of interest are arranged from time to time, and published lists of these visits are available. The following are a few of the art centers within a convenient radius of Durham: Addison Gallery of American Art, Currier Gallery of Art, Museum of Fine Arts of Bowdoin College, and several excellent museums and galleries in Boston, including the Boston Museum of Fine Arts, the Gardner Museum, and the Fogg Museum at Harvard University.

BACTERIOLOGY

BACTERIOLOGY

LAWRENCE W. SLANETZ, *Associate Professor*, CLARA H. BARTLEY, *Assistant Professor*

1. GENERAL BACTERIOLOGY. Principles of Bacteriology; morphology, physiology, and classification of bacteria and other microorganisms, and their relationships to agriculture, industry, sanitation, and infectious diseases. Mr. Slanetz. Prereq.: Chem. 1-2 or equivalent; 2 lec.; 2 lab.; 4 cr.

2. FOOD AND SANITARY BACTERIOLOGY. Relation of microorganisms to food production; food preservation; food infections and intoxications; standard laboratory methods for the bacteriological examination of foods. Bacteriology and sanitation of water, sewage, air, and eating utensils. Disinfection and disinfectants. Mrs. Bartley. Prereq.: Bact. 1. 2 lec.; 2 lab.; 4 cr.

3. ELEMENTS OF MICROBIOLOGY. Lectures and recitations or laboratory demonstrations on the nature and characteristics of bacteria, viruses, yeast and molds; the relationships of these microorganisms to agriculture, industry, sanitation, and infectious diseases. For students who, as part of their cultural training, desire some knowledge of microbes and their role in everyday life. Mr. Slanetz. 3 lec. or rec.; 3 cr. (Not open to Freshmen.)

4. PUBLIC HEALTH AND SANITATION. A consideration of the causal agents, prevalence, transmission, and control of the communicable diseases. Sanitation of water, sewage, food, and air. Community hygiene and public health administration. Mr. Slanetz. Prereq.: Biol. 1-2, or consent of instructor. 3 lec. or demonstrations; 3 cr.

6. AGRICULTURAL AND SOIL BACTERIOLOGY. Study of important soil bacteria and their role in soil fertility; characteristics of bacteria and viruses causing plant disease. Prereq.: Bact. 1. 2 lec.; 1 lab.; 3 cr.

8. PATHOGENIC BACTERIOLOGY. A study of the morphological, cultural, biochemical, serological, and pathogenic characteristics of microorganisms causing human and animal diseases. Mr. Slanetz and Mrs. Bartley. Prereq.: Bact. 1. 2 lec.; 2 lab.; 4 cr.

53. IMMUNOLOGY AND SEROLOGY. The theories of infection and immunity; production of vaccines, toxins, and antisera; serological techniques of disease diagnosis and identification of bacteria, including agglutination, precipitating, and complement fixation tests. Mrs. Bartley. Prereq.: Bact. 8. 2 lec.; 2 lab.; 4 cr.

55, 56. PROBLEMS IN BACTERIOLOGY. Special problems, depending upon the training and desire of the student. Elective only upon consultation. Mr. Slanetz and members of the staff. Credits to be arranged.

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57, 58. BACTERIOLOGY SEMINAR. Reports and discussions on current literature and recent developments in bacteriology. Mr. Slanetz and members of the staff. Prereq.: Bact. 2 or 8 and consent of the instructor. One 2-hour period; 1 cr.

COURSES PRIMARILY FOR GRADUATE STUDENTS

101. PHYSIOLOGY OF BACTERIA. A study of the growth, nutrition, and metabolism of bacteria; influence of physical and chemical environment on growth; bacterial enzymes; protein decomposition and fermentation. Prereq.: Bact. 2 or 8, or equivalent. 3 lec.; 3 cr.

104. SYSTEMATIC BACTERIOLOGY. A study of the development of a systematic classification of bacteria; modern methods of nomenclature and classification; problems encountered in the classification of bacteria. Mr. Slanetz. Prereq.: Bact. 2 or 8, or equivalent. 2 lec.; 2 cr.

BIOLOGY

Biol. 1-2. MAN AND THE LIVING WORLD. This is a basic course in Biology, designed to give the student fundamental facts about himself and a broad understanding of his relation to the living world, both plant and animal, of which he is a part. Mr. Moore. 3½ lec. or rec.; 1 lab.; 4 cr. *This course cannot be used to satisfy major requirements.*

BOTANY

ALBION R. HODGDON, *Associate Professor*; STUART DUNN, *Associate Professor*; M. C. RICHARDS, *Associate Professor*; MARIAN E. MILLS, *Assistant Professor*; RICHARD C. JONES, *Assistant Professor*.

1. GENERAL BOTANY. The principal plant groups with emphasis on structure, function, and economic importance stressing agricultural applications. Miss Mills. Required of Freshmen in Agriculture. 2 lec.; 2 lab.; 4 cr.

2. GENERAL BOTANY. A general survey of the entire plant kingdom with emphasis on development, reproduction, and evolutionary trends. Miss Mills. Prereq.: Bot. 1 or Bot. 3. 2 lec.; 2 lab.; 4 cr.

3. THE PLANT WORLD. The structure and function of plant parts. The application of basic biological principles to plant life. Students who have had Bot. 1 should not elect this course. Mr. Hodgdon. Prereq.: Biol. 1-2. 3 lec.; 1 lab.; 4 cr.

5. PLANT ANATOMY AND CYTOLOGY. The anatomy of seed plants as revealed by free-hand and sliding microtome sections and simple staining. A brief review of cell structure as shown by cytological methods. Mr. Jones. Prereq.: Bot. 1 or Bot. 3. 2 lab.; 2 cr.

6. SYSTEMATIC BOTANY. The identification and classification of our native trees, shrubs, and wild flowers. Mr. Hodgdon. Prereq.: Biol. 1-2 or Bot. 1; 1 lec.; 2 lab.; 3 cr.

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40. PLANT PHYSIOLOGY. Structure and properties of the cell; absorption and movement of water; metabolism; growth and irritability. Mr. Dunn. Prereq.: Bot. 1 or Bot. 3, and one year of Chemistry. 2 lec.; 2 lab.; 4 cr.

42. PLANT ECOLOGY. Plant life and its environment including a consideration of the principal environmental factors such as light, temperature, soil water, and biotic relations; study of associations, successions, and plant forms; a survey of plant distribution and underlying causes. Mr. Hodgdon. Prereq.: Bot. 1 or Biol. 1, 2. 2 lec.; 1 lab.; 3 cr.

51. PLANT PATHOLOGY. The nature of disease in plants, the etiology, symptomatology, and classification of plant diseases. Mr. Richards. Prereq.: Bot. 1 or Bot. 3. 1 lec.; 2 lab.; 3 cr.

52. PRINCIPLES OF PLANT DISEASE CONTROL. Exclusion, eradication, protection and immunization, and the specific, practical methods used to control plant diseases. Mr. Richards. Prereq.: Bot. 1 or Bot. 3. 1 lec.; 2 lab.; 3 cr.

55. ADVANCED SYSTEMATIC BOTANY. The principles and laws of plant classification and nomenclature; study of plant families, field and herbarium work. Mr. Hodgdon. Prereq.: Bot. 6. Hours to be arranged. 4 cr.

57, 58. PROBLEMS IN (a) SYSTEMATIC BOTANY, (b) PLANT PHYSIOLOGY, (c) PLANT PATHOLOGY, AND (d) PLANT ANATOMY AND CYTOLOGY. Elective only upon consultation with Head of Section. Mr. Hodgdon, Mr. Dunn, Mr. Richards, and Mr. Jones. Hours to be arranged. 2 to 6 credits.

COURSES PRIMARILY FOR GRADUATE STUDENTS

102. PLANT ECOLOGY. Requirements for growth; specialization and adaptation; geographic and physiographic relations. Regional floras. Interpretation and classification of habitat. Specific problems are assigned. Mr. Hodgdon. Prereq.: Bot. 55. Incidental lectures, laboratory and field work. 4 cr.

103. MYCOLOGY. Studies of the parasitic and saprophytic fungi, their growth, reproduction, and identification. Mr. Richards. Laboratory and assigned reading. 1 lec.; 2 lab.; 3 cr.

105. ADVANCED PLANT PHYSIOLOGY. Absorption, translocation, transpiration, and excretion of water, and effect on environmental factors upon these phenomena; permeability and mineral nutrition. Mr. Dunn. Prereq.: Bot. 40 or equivalent. Conferences, laboratory, and assigned reading. 3 cr. (Note: Both Bot. 105 and 106 should be taken for a complete covering of the subject.)

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106. **ADVANCED PLANT PHYSIOLOGY.** Photosynthesis; respiration, growth; reproduction; and movement; effect of environmental factors on these phenomena. Mr. Dunn. Prereq.: Bot. 40 or equivalent. Conferences, laboratory, and assigned reading. 3 cr.

107. **ADVANCED PLANT HISTOLOGY.** A methods course in embedding, sectioning, and staining the fungi and tissues of higher plants. Mr. Richards. Prereq.: Bot. 1. Laboratory and assigned reading. 3 cr.

BUILDING CONSTRUCTION

E. T. HUDDLESTON, *Professor of Architecture*

(Register the following subjects as: B-CE 11, 12 etc.)

11-12. **DOMESTIC ARCHITECTURE.** A comprehensive view of the architectural profession and the building construction industry to the end that the relationships of the architect, engineer, contractor, materials producer, and client may be better understood. A brief history of domestic architecture with special emphasis on early American housing, and its present-day influence. The solution of modern housing problems to develop the relation of the house plan to family requirements, individual site, garden, accessory buildings, and the community. 11, 2 rec.; 2 cr. 12, 1 rec.; 1 lab.; 2 cr. Elective by permission of instructor.

21-22. **BUILDING CONSTRUCTION.** Basic modern building materials and their use in the construction of walls, columns, floors, roofs, doors, windows, etc., illustrating their varied application to contemporary architectural usage. Principles of structural design and an analysis of structural systems as applied to wood frame house, light and heavy timber, steel and reinforced concrete construction. The relation of structural systems in the solution of various types of building problems with special emphasis given to building code requirements for safety. 21, 3 rec.; 3 cr. 22, 2 rec.; 1 lab.; 3 cr.

31-32. **PROFESSIONAL PRACTICES.** The personal, ethical, business, and legal relations of the architect and consulting engineers with clients, contractors, etc. Procedure in the conduct of an architect's office with the preparation of complete contract documents for an assigned construction job, including advertisement, bond, form of proposal, information for bidders, agreement form, and general conditions covering the operational relations of the various parties to the contract. The fundamentals of specification writing and methods of estimating and appraising buildings. 3 rec.; 3 cr.

CHEMISTRY

BUSINESS ADMINISTRATION

(See page 198)

CHEMISTRY AND CHEMICAL ENGINEERING

HAROLD A. IDDLER, *Professor*; OSWALD T. ZIMMERMAN, *Professor*; ALBERT F. DAGGETT, *Professor*; MELVIN M. SMITH, *Associate Professor Emeritus*; JAMES A. FUNKHOUSER, *Associate Professor*; EDWARD R. ATKINSON, *Associate Professor*; JOHN L. TORGESSEN, *Assistant Professor*; HELMUT M. HAENDLER, *Assistant Professor*; DONALD W. BRECK, *Instructor*; RUSSELL L. CLARK, *Instructor*; FRANK B. MARCOTTE, *Instructor*; MARGARET T. WHITTEMORE, *Instructor*.

1-2. GENERAL CHEMISTRY. A broad course in Elementary Chemistry with many lecture demonstrations and some laboratory practice. Topics of interest to the professional student and of general interest are presented. For Liberal Arts and Agriculture students. Messrs. Torgesen, Breck, Mrs. Whittemore and assistants. 2 lec.; 1 rec.; 1 lab.; 4 cr.

3-4. GENERAL CHEMISTRY. The fundamental laws and conceptions of Chemistry, including a study of the non-metals and metals and their compounds. The theoretical principles are illustrated by many lecture demonstrations, and the applications of Chemistry in the professions are explained. Messrs. Iddles, Funkhouser, Haendler, Clark, and assistants. For students who plan to take further courses in the Department of Chemistry. 2 lec.; 1 rec.; 1 lab.; 4 cr.

6. INORGANIC CHEMISTRY. A continuation of Chemistry 3 covering the fundamental laws and conceptions of Chemistry involved in a study of the non-metals and metals and their compounds. Mr. Iddles, and assistants. Prereq.: Chem. 3, Mathematics 5, and permission of instructor. 2 lec.; 1 rec.; 3 lab.; 6 cr.

11-12. SURVEY OF CHEMISTRY. Lectures and demonstrations on general Chemistry, designed for the pursuit of Chemistry as an element of general culture rather than as professional training, and for knowledge of the spirit of a branch of science on which much of our present-day civilization is based. Textbook: Findlay, *The Spirit of Chemistry*. Mr. Iddles. Elective for Sophomore, Junior, and Senior students. 3 lec.; 3 cr.

21. SEMI-MICRO QUALITATIVE ANALYSIS. The fundamental theories of solutions and colloids as applied to the reactions of qualitative analysis. Problem work is required. The laboratory work uses the semi-micro technique and provides ample experience in the analysis of simple and complex mixtures. For Chemistry majors. Mr. Haendler and assistant. Prereq.: Chem. 4 or 6. 2 lec.; 2 lab.; 4 cr.

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22. **QUANTITATIVE ANALYSIS.** The theory and laboratory technique of the more common determinations of gravimetric and volumetric analysis. Emphasis on the solution of problems. A comprehensive study of the more common analytical methods. Mr. Daggett, Mr. Marcotte, and assistants. Prereq.: Chem. 21. 2 lec.; 3 lab.; 5 cr.

25, 26. **INTRODUCTORY QUANTITATIVE AND QUALITATIVE ANALYSIS.** First semester: The theory, problems, and technique involved in some of the common procedures in both gravimetric and volumetric quantitative methods. Second semester: The theory and problems of qualitative analysis. The laboratory work is conducted on a semi-micro scale and presents the special methods of technique involved. For Pre-medical and Pre-dental students, as a preparation for various sciences, and as a preparation for secondary school teaching. Messrs. Daggett, Haendler, Marcotte, and assistants. Prereq.: Chem. 4. 1 lec.; 2 lab.; 3 cr.

31. **STOICHIOMETRY AND TECHNICAL QUANTITATIVE ANALYSIS.** The laboratory portion provides sufficient experience to develop the skill and special technique necessary for the analysis of alloys, gaseous, liquid, and solid fuels, gas mixtures, oils, and lubricants. The lectures interpret the results of technical analyses and their application to the calculation of heat and material balances in industrial processes. Mr. Daggett. Prereq.: Chem. 22. 3 lec.; 2 lab.; 5 cr.

45, (45). **ORGANIC CHEMISTRY.** An introductory but comprehensive study of the chemistry of carbon compounds with emphasis on the particular phases of the subject needed by students preparing to be technicians, nurses, majors in Biological Sciences, and others, where a brief course is desired. Mr. Clark. Prereq.: Chem. 3-4. (Elective for medical technicians, nurses, majors in Biology, Pre-dental students.) 3 lec.; 2 lab.; 5 cr.

47-48. **ORGANIC CHEMISTRY.** Lectures on the principal classes of organic compounds, aliphatic and aromatic, with emphasis on class reactions and structural theory. Laboratory exercises in the preparation and purification of selected organic compounds; also the use of group reactions for the identification of organic substances in a systematic scheme of qualitative organic analysis. Mr. Iddles, Mr. Funkhouser and assistants. Prereq.: Chem. 22 or Chem. 25-26. 3 lec.; 2 lab.; 5 cr.

55, 56. **STRUCTURAL AND THEORETICAL PROBLEMS OF MODERN ORGANIC CHEMISTRY.** An intensive review of the methods of preparation and reactions of the principal classes of organic compounds. Emphasis is on the working of assigned problems. The electron theory of Organic Chemistry is used to correlate the chemical behavior of unsaturated compounds, free radicals, and other classes. Mr. Atkinson. Prereq.: Chem. 48. 3 lec.; 3 cr.

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62. INSTRUMENTAL ANALYSIS. The theory and technique of special and recently developed methods of analysis such as colorimetry, turbidimetry, potentiometry, and spectography. Sufficient experience is obtained to allow the development of considerable skill in even the more complex methods. Mr. Daggett. Prereq.: Chem. 22. 2 lec.; 2 lab.; 4 cr.

71-72. UNIT PROCESSES. The important inorganic and organic industrial chemical processes from the point of view of the basic chemical reactions and physical operations involved. Mr. Zimmerman. Prereq.: Chem. 22. 2 lec.; 2 cr.

74-75. UNIT OPERATIONS. The theory and practice of the fundamental chemical engineering unit operations, including flow of fluids, flow of heat, evaporation, distillation, drying, filtration, gas absorption, extraction, humidification and air conditioning, crystallization, crushing and grinding, and size separation. Mr. Zimmerman. Prereq.: Chem. 71, 83. 3 lec.; 3 cr.

76. CHEMICAL ENGINEERING ECONOMICS. The economic factors involved in industrial chemical processes and the application of economic balances to the design and selection of chemical engineering equipment. Mr. Zimmerman. Prereq.: Chem. 75, 77. 3 lec.; 3 cr.

77. UNIT OPERATIONS LABORATORY. Experiments based upon the unit operations are performed on typical chemical engineering equipment. Mr. Zimmerman. Prereq.: Chem. 74, 84. 3 lab.; 3 cr.

78. CHEMICAL PLANT DESIGN. The design and layout of chemical plants and equipment. The assigned problems are of a practical nature, such as the manufacture of some chemical product, and their solution will include the design or selection of all equipment and drawings of equipment, plant, and layout. Mr. Zimmerman. Prereq.: Chem. 75, 77. 3 lab.; 3 cr.

79. CHEMICAL ENGINEERING THERMODYNAMICS. A study of the fundamental laws of energy and their application to chemical engineering problems. Mr. Zimmerman. Prereq.: Chem. 84 and Chem. 74. 2 lec.; 1 rec.; 3 cr.

80. CHEMICAL ENGINEERING PROJECT. Each student selects a research problem which he carries out independently under Faculty supervision. Intensive study in both the library and the laboratory and a satisfactory thesis at the completion of the work are required. Mr. Zimmerman. Prereq.: Chem. 75, 77. 4 lab.; 5 cr. (Not offered in 1948-1949.)

82. PRE-MEDICAL AND PRE-DENTAL PHYSICAL CHEMISTRY. A brief review and survey of the more important fundamental topics of Physical Chemistry; thereafter, those topics of Physical and Theoretical Chemistry which have application in the medical, biological, and agricultural sciences. Mr. Torgesen. Prereq.: Chem. 2, Phys. 2, 6 or 8, Math. 6 or equivalent. 3 lec.; 3 cr.

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83-84. **ELEMENTARY PHYSICAL CHEMISTRY.** The properties of gases liquids, and solids; thermochemistry and thermodynamics; solutions, chemical equilibria, reaction rates, conductance and electromotive force. Mr. Torgesen. Prereq.: Chem. 22, Math. 18, Phys. 8. 3 lec.; 2 lab.; 5 cr.

85, 86. **ADVANCED PHYSICAL CHEMISTRY.** A complete review of elementary Physical Chemistry followed by a study of the structure and properties of matter. In the latter part of the course the subject matter will include radioactivity, atomic structure, crystal structure, and related topics. Mr. Haendler. Prereq.: Chem. 84 or equivalent. 3 lec.; 3 cr.

87, 88. **CHEMICAL LITERATURE AND SEMINAR.** Use of the Chemical Library; student reports on topics of interest. Mr. Atkinson. Prereq.: Chem. 62 and Chem. 48. 1 lec.; 1 cr.

89-90. **THESIS.** A thesis covering the related background and experimental observations of the year's investigation in some selected subject is required. Members of the staff. For Seniors in Chemistry, who have completed Chem. 48, 62, and 84. 5 lab.; 5 cr.

COURSES PRIMARILY FOR GRADUATE STUDENTS

111. **ORGANIC CHEMISTRY.** The chemistry of the polynuclear compounds and heterocyclic systems. Mr. Iddles. 3 rec.; 3 cr.

112. **ORGANIC CHEMISTRY** The chemistry of natural products. Mr. Iddles. 3 rec.; 3 cr.

115. **ORGANIC CHEMISTRY LABORATORY.** Qualitative Analysis. The reactions and properties of organic compounds. Use of group reactions in the identification of organic substances. Mr. Atkinson. 1 rec.; 2-4 lab.; 3-5 cr.

116. **ORGANIC CHEMISTRY LABORATORY.** Micro-Quantitative Analysis. The combustion for carbon and hydrogen, Dumas nitrogen, Kjeldahl nitrogen, estimation of halogens, of sulphur, and of organic radicals. Mr. Atkinson. 1 rec.; 2 lab.; 3 cr.

121. **PHYSICAL CHEMISTRY. CHEMICAL THERMODYNAMICS.** The application of thermodynamics to chemistry. The principles of thermodynamics will be thoroughly reviewed. These principles will be applied in detail to the phase rule, chemical equilibrium, electromotive force, theory of solutions, specific heats, and similar topics. Prereq.: One year of Physical Chemistry. 3 rec.; 3 cr.

122. **PHYSICAL CHEMISTRY. CHEMICAL KINETICS.** A study of the kinetics of homogeneous and heterogeneous reactions in gaseous and liquid systems, including an introduction to photo-chemistry. Mr. Daggett. Prereq.: One year of Physical Chemistry. 3 rec.; 3 cr.

CHEMISTRY

124. ADVANCED PHYSICAL CHEMISTRY LABORATORY. The more modern experimental technique of physical chemistry. Emphasis on the needs and interests of each individual student. Topics will include the measurement of refractive index, molecular rotation, activity coefficients by vapor pressure, and E. M. F. methods, heterogeneous and homogeneous equilibrium constants, and kinetic constants. Mr. Torgesen. 1 lec.; 2 lab.; 3 cr.

131-132. COLLOQUIUM IN CHEMISTRY. A description of the series of lectures to be presented will be announced for each semester. *Colloids*, Mr. Torgesen; *Advanced Inorganic Chemistry*, Mr. Haendler; *History of Chemistry*, Mr. Funkhouser; *Organic Chemistry*, Mr. Atkinson; *Physical Chemistry*, *Analytical Chemistry*, Mr. Daggett. 3 lec.; 3 cr.

135. UNIT OPERATIONS—FLUID FLOW, HEAT FLOW, AND EVAPORATION. An advanced course dealing with the fundamental theory and applications of these operations. Mr. Zimmerman. Prereq.: Chem. 74 or equivalent. 2 lec. or 3 rec.; 2 cr.

136. UNIT OPERATIONS—DIFFUSION OPERATIONS. An advanced study of the principles of diffusion and their application to the unit operations of distillation, absorption, drying, humidification and extraction. Mr. Zimmerman. Prereq.: Chem. 75 or equivalent. 2 lec. or rec.; 2 cr.

141. 142. SEMINAR. Presentation and discussion of recent investigations in the field of chemistry. No credit.

151, 152. PROBLEMS IN CHEMISTRY. Conferences, library and experimental work in some field of chemistry. *Analytical Chemistry and Photo-Chemistry*, Mr. Daggett; *Inorganic Chemistry*, Mr. Haendler; *Organic Chemistry*, Mr. Iddles, Mr. Funkhouser, Mr. Atkinson; *Physical Chemistry*, Mr. Torgesen; *Chemical Engineering*, Mr. Zimmerman. Prereq.: Special permission. Credits to be arranged.

CIVIL ENGINEERING

EDMOND W. BOWLER, *Professor*; RUSSELL R. SKELTON, *Professor*; CHARLES O. DAWSON, *Associate Professor*; PAUL A. TOWNSEND, *Instructor*; DAVID G. STUART, *Instructor*

2. SURVEYING. The theory and use of surveying instruments and methods, including measurement of angles, direction and distance, differential leveling, land surveying, note keeping, and calculations and plotting relating to traverses. Mr. Townsend. Prereq.: Math. 5 or 13. 1 rec.; 1 lab.; 2 cr.

3-4. SURVEYING. Theory and use of surveying instruments and methods on plane, precise, and topographic surveys, including: the use and adjustment of tapes, transits, levels, and plane tables, topographic mapping, solution of miscellaneous problems in topographic surveying, highway and railway curves, observations and reduction of observa-

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tions on the sun and Polaris for latitude, time, and direction, profile leveling, city surveying, base line measurements, triangulation, and mapping programs in the United States. Some time is spent in the practice of the execution of topographic symbols and lettering. A topographic survey of a small area is completed in the field by the transit and stadia method and a map of the same area is plotted in the drafting room. A topographic map of a small area is also made by the plane table method. Mr. Dawson. Prereq.: C.E. 2. C.E. 3: 3 rec.; 3 lab.; 6 cr. C.E. 4: 1 rec.; 2 lab.; 3 cr.

6. ROUTE SURVEYING. Theory and practice relating to preliminary and final location surveys for highways, railways, and pipe lines. Theory and problems in earthwork, the mass diagram, grade lines, vertical curves, cross sectioning and slope stakes. Mr. Skelton. Prereq.: C.E. 4 either in parallel or as a prerequisite. 1 rec.; 2 lab.; 3 cr.

9, (9). SURVEYING. The theory and use of tape, level, and transit in making plane surveys, computations and drafting exercises necessary to plot field notes, surveys for record, and the economics and use of surveys for all purposes. Mr. Townsend. Prereq.: Math. 6 or 13. 1 rec.; 1 lab.; 2 cr.

11. SURVEYING. Topographic surveys, determination of earthwork quantities, location of structures, layout of buildings before and during construction, and other special surveying problems pertaining to building construction. Mr. Townsend. Prereq.: C.E. 2 or C.E. 9. 1 lec. or rec.; 2 lab.; 3 cr.

15. ENGINEERING MATERIALS. Methods of manufacture, physical properties, and the application of the various materials used in engineering works, including timber, steel, stone, brick, cement, concrete, and bituminous materials. Laboratory experiments and reports on the testing of cements, aggregates, and concrete specimens. Mr. Skelton. Prereq.: M.E. 9 either in parallel or as a prerequisite. 2 rec.; 1 lab.; 3 cr.

23, (23). FLUID MECHANICS. Properties of fluids; statics of fluids; theorems and criteria of fluid motion; fluid flow through orifices, tubes, nozzles and pipes; flow over weirs; flow in open channels; dynamics of fluids in motion; a brief treatment of hydraulic turbines. Mr. Bowler and Mr. Dawson. Prereq.: M.E. 7 or 9 and Math. 8 or 18. 3 rec.; 3 cr.

27-28. THEORY OF STRUCTURES. The graphical and analytical methods of determining reactions, moments and shears in beams, girders and trusses under fixed and moving loads, and the stresses in various structures including simple, subdivided and multiple trusses, portals, viaducts, cantilevers, and three-hinged arches. The computation of deflections and the application of the method of least work to statically indeterminate structures. Mr. Bowler. Prereq.: Math. 8 or 18, and M.E. 9 and 10 as prerequisites or in parallel. 3 rec.; 1 lab.; 4 cr.

CIVIL ENGINEERING

31. **COMMUNITY PLANNING.** An introduction to the subject of Community Planning, especially designed for those students having a major interest in Civil Engineering or Building Construction, having the following purposes: (1) to acquaint the student with planning programs and processes, (2) to study the content and extent of desirable planning programs, (3) to indicate to the engineer, his place in the preparation and execution of a planning program. For Seniors. Elective by permission of the instructor. Mr. Dawson. 3 lec. or rec.; 3 cr.

38. **THESIS.** The student selects a subject of engineering, scientific, or commercial interest for investigation or design and presents his results as a thesis in which equal emphasis is placed upon composition and accuracy of subject matter. Mr. Bowler, Mr. Skelton, Mr. Dawson, and Mr. Townsend. Prereq.: English 23. 1 conference each week; 2 cr. Students passing this course will receive a grade of Cr.

41, 42, 43, 44. **STUDENT CHAPTER OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS.** Junior and Senior students in Civil Engineering are required to join the student chapter of the American Society of Civil Engineers. In addition to its ordinary life under the guidance of student officers, the chapter meets once a week under the direction of an instructor, when prepared addresses by the student members are presented. Mr. Dawson. $\frac{1}{2}$ credit. Students passing this course will receive a grade of Cr.

52. **FLUID MECHANICS.** Properties of fluids; statics of fluids; theorems and criteria of fluid motion; fluid flow through orifices, tubes, nozzles and pipes; flow over weirs; flow in open channels; dynamics of fluids in motion. Laboratory exercises and stream gaging practice. Mr. Bowler and Mr. Dawson. Prereq.: Math. 8 or 18. 3 rec.; 1 lab.; 4 cr.

61. **HIGHWAY ENGINEERING.** The economics of location and design of highways and city streets; methods of construction, maintenance, and specifications governing the various types of surfaces. The administration and methods of financing of highway systems. Selected problems of location and design are studied in the laboratory. Mr. Skelton. Prereq.: C. E. 6 and 15. 2 rec.; 2 lab.; 4 cr.

62. **SOIL MECHANICS AND FOUNDATIONS.** The principles underlying the behavior of various soils when subjected to structural loads. Problems and methods encountered in foundation design and construction, building codes and legal aspects of foundation construction, also test borings and other underground exploration methods. Mr. Skelton. Prereq.: C.E. 65. 2 lec.; 1 lab.; 3 cr.

63-64. **HYDRAULIC AND SANITARY ENGINEERING.** Precipitation, water losses, run-off, drainage areas, stream flow, water power estimates, hydraulic turbines, dams and waterways; the sources, quantity, quality, and sanitary aspects of public water supplies; the methods of purification.

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tion and distributing systems; the theory and problems of sewerage, the principles of governing the disposal of sewage and the various methods of sewage treatment. Mr. Bowler. Prereq.: C.E. 52. 3 rec.; 1 lab.; 4 cr.

65. **STRUCTURAL DESIGN.** Theory and problems relating to the analysis and design of steel and timber structures. Typical design problems include the plate girder, mill bent, bridge trusses and selected parts of building frames. Economy of design and the interpretation of various specifications are emphasized. Mr. Skelton. Prereq.: C.E. 28. 2 rec.; 2 lab.; 4 cr.

66. **REINFORCED CONCRETE STRUCTURES.** Theory and design of reinforced concrete structures, such as beams, slabs, columns, footings, retaining walls, and small bridges. Mr. Skelton. Prereq.: C.E. 65. 2 rec.; 2 lab.; 4 cr.

COURSES PRIMARILY FOR GRADUATE STUDENTS

101, 102. **ADVANCED HYDRAULICS.** Dimensional analysis, dynamic similarity, mechanics of viscous fluids, fluid flow in pipes, non-uniform flow, alternate stages of flow in open channels, hydraulic jump, and their application to engineering practice. Mr. Bowler. Prereq.: C.E. 64. 3 rec.; 3 cr.

103, 104. **SOIL MECHANICS.** The physical and mechanical properties of soil in relation to engineering structures. The Theory of consolidation, shearing resistance, bearing capacity, settlement, earth pressure, and their applications. Mr. Skelton. Prereq.: Permission of the instructor. 3 lec.; 3 cr.

105. **SAIL TESTING FOR ENGINEERING PURPOSES.** This course is arranged to cover the essential soil tests for engineering purposes. Identification of soils, determination of water content, void ratio, specific gravity, grain size distribution, and Atterberg limits. Tests for the physical properties include: permeability, capillarity, compressibility, rate and magnitude of consolidation, and shearing resistance. Mr. Skelton. Prereq.: C.E. 103 in parallel or as a prerequisite. 1 lec.; 3 lab.; 4 cr.

DAIRY HUSBANDRY

KENNETH S. MORROW, *Professor*; HERBERT C. MOORE, *Associate Professor*; HARRY A. KEENER, *Associate Professor*.

6. **FUNDAMENTALS OF DAIRYING.** A general survey of the dairy industry; the composition and properties of milk and other dairy products, dairy manufacturing processes, market milk, the selection and judging of dairy cattle. Mr. Morrow, Mr. Moore. 2 lec.; 1 lab.; 3 cr.

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23. **DAIRY CATTLE.** Purebred dairy cattle; breed history; pedigrees; family lines and methods of outstanding breeders; the application of the principles of genetics to the improvement of dairy cattle; herd analysis. Mr. Morrow. 2 lec.; 1 lab.; 3 cr.

27. **BUTTER AND CHEESE.** (1) The secretion and the chemical and physical properties of milk; pasteurization; cream ripening; starters; churning; organization and operation of factories. (2) The manufacturing and marketing of more important types of cheese. Mr. Moore. 2 lec.; 1 lab.; 3 cr.

29. **DOMESTIC DAIRYING.** Nutritive value of milk and milk products. Laboratory exercises in the manufacture of dairy products. Mr. Moore. 2 lec.; 1 lab.; 3 cr.

30. **DAIRY BACTERIOLOGY.** The application of bacteriological principles to the production and processing of milk and other dairy products. Mr. Moore. 2 lec.; 2 lab.; 4 cr.

33, 34. **DAIRY CATTLE AND DAIRY PRODUCTS JUDGING.** (1) Comparative judging of dairy cattle, using animals in the University herd and in near-by herds. (2) The various standards and grades of dairy products with practice in judging milk, butter, cheese, and ice cream. Mr. Morrow, Mr. Moore. 1 lab.; 1 cr.

36. **ADVANCED DAIRY CATTLE JUDGING.** Continuation of Dairy Husbandry 33, 34. Emphasis on training for participation on dairy cattle judging teams. Mr. Morrow. Prereq.: Dairy Husbandry, 34. 1 lab.; 1 cr.

60. **DAIRY SEMINAR.** A study of Experiment Station and other literature covering recent research in the various phases of dairying. Dairy Husbandry Staff. 2 lec.; 2 cr.

62. **ADVANCE DAIRY SCIENCE.** Basic data, fundamental observations, and discussions of research contributing to the present status of the dairy industry. Mr. Moore. 2 lec.; 2 cr.

64. **MILK PRODUCTION.** Feeding and management of dairy animals; calf feeding; raising young stock; feeding for economical milk production. Mr. Keener. 2 lec.; 1 lab.; 3 cr.

65. **MARKET MILK.** The producing, handling, and distributing of market and certified milk; dairy farm inspection; control of milk supply. Mr. Moore. 2 lec.; 1 lab.; 3 cr.

66. **ICE CREAM.** The making, handling, and marketing of ice cream and ices. Mr. Moore. 2 lec.; 1 lab.; 3 cr.

COURSES PRIMARILY FOR GRADUATE STUDENTS

101. **ANIMAL NUTRITION.** Incidental lectures, assigned reading, laboratory practice in methods of research with major emphasis on

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basal metabolism. Mr. Colovos. Prereq.: A major in Animal or Dairy Husbandry, or equivalent. 3 cr.

102. **ADVANCED DAIRY CATTLE.** Special emphasis will be given to the analysis and formulating of breeding programs and to milk secretion and factors influencing the quantity and quality of milk. Mr. Morrow. Prereq.: A major in Animal Husbandry or Dairy Husbandry. 2 lec.; 1 lab.; 3 cr.

107. **TECHNICAL CONTROL.** Chemical and bacteriology laboratory methods used in the technical control of milk and milk products. Mr. Moore. Prereq.: Dairy Husbandry 30, or equivalent. 2 lec.; 1 lab.; 3 cr.

109, 110. **SPECIAL PROBLEMS IN DAIRY MANUFACTURE.** Detailed study of some special phase of dairy manufacturing. Mr. Moore. Prereq.: A major in Dairy Husbandry. Conferences and special assignments. 3 cr.

111, 112. **SPECIAL PROBLEMS IN DAIRY PRODUCTION.** Study of some special phase of breeding or feeding as related to dairy-herd management. Mr. Morrow, Mr. Keener. Prereq.: A major in Animal Husbandry or Dairy Husbandry. Conferences and special assignments. 3 cr.

DRAMATICS

(See page 216)

ECONOMICS AND BUSINESS ADMINISTRATION

JOSEPH E. SHAFER, *Professor*; ARTHUR W. JOHNSON, *Professor*; RUTH J. WOODRUFF, *Associate Professor*; CARROLL M. DEGLER, *Associate Professor*; DORIS E. TYRRELL, *Associate Professor*; JOHN A. HOGAN, *Associate Professor*; JOHN D. HÄUSLEIN, *Assistant Professor*; RICHARD L. SMALL, *Lecturer*; MYRA L. DAVIS, *Instructor*; WILLIAM J. JOSKO, *Instructor*; GEORGE BENNETT, *Instructor*; THOMAS A. JACKSON, *Instructor*; BARBARA A. REYNOLDS, *Assistant*.

BUSINESS ADMINISTRATION

Note—Students who have completed two or more years of book-keeping in preparatory school will be permitted to register for Intermediate Accounting 3-4 upon passing an examination covering the material of Business Administration 1-2. *Schedule the following courses as B.Ad. 1, etc.*

1-2. **PRINCIPLES OF ACCOUNTING.** The fundamentals of Accounting. Theory of debit and credit; functions and classifications of accounts; modern accounting records including special and columnar books. Adjusting entries, work sheets, and financial statements. Single proprietorships, partnerships, and an introduction to corporations. Mr. Häuslein, Mr. Josko. 2 lec. or rec.; 2 lab.; 4 cr.

ECONOMICS AND BUSINESS ADMINISTRATION

3-4. **INTERMEDIATE ACCOUNTING.** Comprehensive study of Corporation Accounting, principles and objectives of valuation, consignments, installment selling, depreciation and depletion, funds and reserves, application of funds, and analysis of financial statements. Mr. Johnson. Prereq.: B.Ad. 2. 2 lec. or rec.; 1 lab.; 3 cr.

7-8. **COST ACCOUNTING.** The relation of Cost Accounting to general Accounting. The place of Cost Accounting in modern business. Types of cost systems and their application to particular lines of business. Careful analysis of methods of computing costs. Principles of cost control. Mr. Johnson. Prereq.: B.Ad. 4, or permission of the instructor. 2 lec. or rec.; 1 lab.; 3 cr.

9-10. **HOTEL ACCOUNTING.** Theory and practice of keeping accounting and financial records for hotels. Mr. Häuslein. Prereq.: B.Ad. 1-2. 2 lec.; 1 lab.; 3 cr. (Given in alternate years; offered in 1948-1949).

21-22. **COMMERCIAL LAW.** The law of contracts, agency, sales, negotiable instruments, partnerships, and corporations. Mr. Bennett. Elective for Juniors and Seniors. 3 lec. or rec.; 3 cr.

23. **BUSINESS COMMUNICATION.** Report writing, including preparation of charts, forms, and graphs. Methods of intra-office, inter-office, and inter-business communication. Preparation of instruction data for employees, minutes of meetings and manuals of company practices and procedures. Business letters of various types. Open to Sophomores, Juniors, and Seniors. 3 lec. or rec.; 3 cr.

24. **INTRODUCTION TO BUSINESS.** The course is designed to acquaint the student with general business problems and procedures and to provide an introduction to advanced courses. Required of students electing the Business curriculums. Others admitted by permission of the instructor. 3 lec. or rec.; 3 cr.

34. **BUSINESS MANAGEMENT.** Fundamental principles and techniques of successful organization, management and operation of business activities. Open to Juniors and Seniors. 3 lec. or rec.; 3 cr.

45. **PRINCIPLES OF SELLING.** Principles and methods used by commercial and industrial concerns in selling to the ultimate consumer. Consideration of principles employed in personal selling both in retail establishments and elsewhere. Mr. Small. Prereq.: Junior or Senior standing or permission of the instructor. 3 lec. or rec.; 3 cr.

46. **PRINCIPLES OF RETAILING.** Methods and principles of operating chain, department, specialty and unit stores. Consideration of retail location, store layout and merchandise classification, sales and service policies, pricing, buying and organization. Mr. Josko. Prereq.: Econ. 24. 3 lec. or rec.; 3 cr.

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47. **PRINCIPLES OF ADVERTISING.** Principles and methods underlying the preparation, use and evaluation of advertising. Various types of media such as newspapers, magazines and radio critically considered. Mr. Jackson. Prereq.: Econ. 24. 3 lec. or rec.; 3 cr. (Not offered in 1948-1949.)

48. **SALES MANAGEMENT.** Principles of successful sales management; their application; merchandising; sales promotion; building a sales organization; advertising's place in sales management; sales policies, costs and controls; selection, development and training of sales staffs. Prereq.: Junior or Senior standing. 3 lec. or rec.; 3 cr.

52. **MARKET ANALYSIS AND RESEARCH.** The nature, procedures and applications of market research in business. Determination of sales quotas, market potentialities and the measurement of replacement demand. Mr. Jackson. Prereq.: Econ. 24. 3 lec. or rec.; 3 cr.

55. **ADVANCED ACCOUNTING.** Advanced theory of Accounting, corporate consolidations, insolvencies, realization and liquidation problems, estate accounting. Mr. Johnson. Prereq.: B.Ad. 4 or equivalent. 2 lec. or rec.; 1 lab.; 3 cr.

56. **FEDERAL TAX ACCOUNTING.** The Federal Income Tax Laws and accounting procedure in connection therewith. Social security taxes, estate and gift taxes. Mr. Johnson. Prereq.: B.Ad. 4, or permission of the instructor. 2 lec. or rec.; 1 lab.; 3 cr.

57. **AUDITING.** Study of procedure and practice in the verification of records, analysis of accounts and the presentation of conclusions. Attention is given to the responsibilities of the auditor and the procedure and practice of preparing reports. Prereq.: B.Ad. 4 or equivalent. 2 lec. or rec.; 3 cr.

58. **ACCOUNTING SYSTEMS.** Study of underlying principles of building accounting systems. Designing of systems for various types of business enterprises. Prereq.: B.Ad. 4 or equivalent. 2 lec. or rec.; 1 lab.; 3 cr.

68. **PERSONNEL ADMINISTRATION.** A study of methods and techniques employed in personnel administration from the standpoint of the executive. Open to Juniors and Seniors. Mr. Hogan. 3 lec. or rec.; 3 cr.

70. **GENERAL INSURANCE.** The field of Insurance; social value; physical and moral hazards; risk, its nature and economic significance; reinsurance; types of insurance coverages; fire, casualty, life, social. Fidelity and surety bonds. Open to Juniors and Seniors or by permission of the instructor. Mr. Johnson. 3 lec. or rec.; 3 cr.

ECONOMICS AND BUSINESS ADMINISTRATION

SECRETARIAL STUDIES

Schedule the following courses as Sec. St. 1, etc.

1-2. **SHORTHAND.** Principles of Gregg shorthand with practice in transcribing from shorthand plates and class notes. Sec. St. 7-8 must either be taken in conjunction with this course or precede it. Miss Tyrrell. 5 rec.; 3 cr.

3-4. **ADVANCED SHORTHAND.** A review of fundamental principles, the building of shorthand vocabulary, practice in taking dictation at increasing rates of speed, and practice in developing skill and speed in transcription. Miss Tyrrell. Prereq.: Sec. St. 2, or equivalent. 5 rec.; 3 cr.

5, (5). **PERSONAL USE TYPEWRITING.** Practice in acquiring correct typing techniques, arranging outlines, notes, themes, bibliographies, and simple tabulations. Open to any student who does not know how to typewrite. 5 lab.; 1 cr.

7-8. **TYPEWRITING.** Practice in acquiring correct typewriting techniques, and in arranging letters, tabulations, and simple manuscripts. Miss Davis. 5 lab.; 2 cr. (*See Sec. St. 27.*)

9-10. **ADVANCED TYPEWRITING.** Practice in tabulating and in writing business letters, legal papers, and various business forms; and practice in transcribing shorthand notes. Miss Davis. Prereq.: Sec. St. 8 or the equivalent. 5 lab.; 2 cr.

11. **FILING.** Various alphabetic, numeric, and geographic subject-matter systems of correspondence filing; cross reference; follow-up methods; filing supplies and equipment; practice in filing. Miss Davis. Prereq.: Sec. St. 7. 3 rec. or lec.; 2 cr.

13. **OFFICE MACHINES.** Duplicating methods; practice in typing master copies and stencils, and in operating a gelatin duplicator, a mimeograph, and a mimeoscope; practice in machine transcription; and an introduction to adding and calculating machines. Miss Davis. Prereq.: Sec. St. 8. 5 lab.; 2 cr.

17-18. **SECRETARIAL OFFICE PROCEDURE AND PRACTICE.** First semester, discussion of Secretarial duties and traits; problems in the discharge of various duties; and problems in office management. Second semester, 144 hours of practice Secretarial work in business offices. Miss Tyrrell. This course must be taken in conjunction with Sec. St. 3-4 and Sec. St. 9-10, or following these courses. 3 rec.; 3 cr.

19-20. **SECRETARIAL OFFICE PROCEDURE.** Discussion of Secretarial duties and traits; problems in the discharge of various duties; and problems in office management. Miss Tyrrell. For Two-Year Secretarial students holding part-time University clerical positions; not open to others except by permission of the instructor. 2 rec.; 2 cr. (Not offered in 1948-1949.)

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22. **ADVANCED DICTATION.** Speed building in dictation and transcription. Miss Tyrrell. Prereq.: Sec. St. 4. 3 rec.; 3 cr.

23-24. **BUSINESS WRITING.** Practice in writing various types of business letters and reports; proofreading; editing. Miss Tyrrell. 3 lec. or rec.; 3 cr.

27. **TYPEWRITING.** Practice in acquiring correct typewriting techniques, and in arranging letters, tabulations, and simple manuscripts. This course is to be taken instead of Sec. St. 7 by Secretarial students who have had Sec. St. 5 or the equivalent. Miss Davis. 5 lab.; 1 cr.

ECONOMICS

1-2. **PRINCIPLES OF ECONOMICS.** The fundamental principles which explain the organization and operation of the economic system. Mr. Shafer, Mr. Degler, Miss Woodruff. *Not open to Freshmen.* 3 lec. or rec.; 3 cr.

3. **ECONOMIC AND COMMERCIAL DEVELOPMENT OF THE UNITED STATES.** Miss Woodruff. 3 lec. or rec.; 3 cr.

ECONOMIC GEOGRAPHY. (See Geog. 4, page 222.)

5. **ECONOMIC AND COMMERCIAL DEVELOPMENT OF EUROPE.** Not open to Freshmen. 3 lec. or rec.; 3 cr. (Not offered in 1948-1949.)

10. **TRANSPORTATION.** Development and organization of transportation agencies. Prereq.: Econ. 2. 3 lec. or rec.; 3 cr.

24. **MARKETING.** The economics of the marketing functions, agencies, and special problems of marketing. Mr. Jackson. Prereq.: Econ. 2. (May be taken concurrently.) 3 lec. or rec.; 3 cr.

31, (31). **ECONOMIC AND BUSINESS STATISTICS.** The collection, analysis, interpretation, and presentation of statistical data as applied to economic and business problems. Frequency distributions, index numbers, time series, simple correlations. Emphasis is upon the interpretation and use of statistics. Required of all students majoring in Economics and Seniors in the Business Administration Curriculums. Prereq.: Econ. 2. 2 lec. or rec.; 1 lab.; 3 cr.

51. **LABOR ECONOMICS.** Historical background and present status of labor organizations and problems. Mr. Hogan. Prereq.: Econ. 2. 3 lec. or rec.; 3 cr.

52. **PUBLIC FINANCE.** Theory and practice of public expenditures and collection of public revenues; problems and policies in financial administration, national, state, and local; taxation problems in the state of New Hampshire. Prereq.: Econ. 2. 3 lec. or rec.; 3 cr.

ECONOMICS AND BUSINESS ADMINISTRATION

53. MONEY AND BANKING. Theory and practice of money and banking. Mr. Degler. Prereq.: Econ. 2. 3 lec. or rec.; 3 cr.

54. ADVANCED MONEY AND BANKING. Advanced monetary theory and some of the more practical aspects of modern banking. Prereq.: A satisfactory grade in Econ. 53. Mr. Degler. 3 lec. or rec.; 3 cr.

55. CORPORATIONS. Development and forms of business organization and combination. Mr. Degler. Prereq.: Econ. 2. 3 lec. or rec.; 3 cr.

56. CORPORATION FINANCE. Methods of financing corporate enterprise. Mr. Degler. Prereq.: Econ. 2. 3 lec. or rec.; 3 cr.

59, 60. SEMINAR IN CURRENT ECONOMIC PROBLEMS. Elective for Seniors majoring in Economics who have attained a satisfactory standing in the Department. Recitations and reports; 3 cr.

62. PUBLIC REGULATION OF BUSINESS. The Government control of business organizations and their activities with special reference to recent legislation affecting business. Mr. Alexander. Open to Juniors and Seniors who have completed Economics 2 or Government 2. 3 lec. or rec.; 3 cr.

63. INTERNATIONAL TRADE AND FINANCE. Theory of international trade, foreign exchange, balance of international payments, tariffs and protection; the economic aspects of international relations, with particular reference to recent policies. Miss Woodruff. Prereq.: Econ. 2. 3 lec. or rec.; 3 cr. (Given in alternate years; offered in 1948-1949.)

64. COMPARATIVE STUDY OF ECONOMIC SYSTEMS. An examination of socialism, communism, capitalism, and modifications of these types, particularly as exemplified by leading nations. Prereq.: Econ. 2 or permission of the instructor. Miss Woodruff. 3 lec. or rec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

76. VALUE AND DISTRIBUTION. An advanced course in economic theory. Emphasis is upon the theory of price and the distribution of income. Prereq.: Econ. 2. 3 lec. or rec.; 3 cr.

COURSES PRIMARILY FOR GRADUATE STUDENTS

151, 152. LABOR SEMINAR. Advanced study of labor markets, wage incentive systems, job evaluation, relation of wage policy to employment and problems raised by these and other factors in negotiating collective bargaining contracts. Collective bargaining studied as a means of establishing a system of industrial jurisprudence. Class discussion based primarily on case studies. Mr. Hogan. 3 lec. or rec.; 3 cr.

157-158. HISTORY OF ECONOMIC THOUGHT. A critical study of the development of economic concepts and ideas. Attention is given to

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the various schools of economic thought. Prereq.: 18 hours of major credit in economics and the consent of the instructor. 3 lec. or rec.; 3 cr.

181, 182. READING AND RESEARCH IN ECONOMICS. With the advice and consent of the instructor, a student prepared by training and experience to do independent work may register for a reading and research course. The student will undertake assigned problems and readings under the guidance of the instructor. Hours and credits by arrangement. *Economic History*, Miss Woodruff; *International Trade*, Miss Woodruff; *Corporations*, Mr. Degler; *Money and Banking*, Mr. Degler; *Economic Theory*, Mr. Shafer.

EDUCATION

THOMAS O. MARSHALL, *Professor*; A. MONROE STOWE, *Professor*; HARLAN M. BISBEE, *Associate Professor Emeritus*; EVERETT B. SACKETT, *Associate Professor*; WAYNE S. KOCH, *Assistant Professor*; AUSTIN L. OLNEY, *Assistant Professor*; FREDERICK E. ELLIS, *Instructor*.

HERBERT A. CARROLL, *Professor (Educational Psychology)*; HELEN F. McLAUGHLIN, *Professor (Home Economics-Education)*; CLIFFORD S. PARKER, *Professor (Language-Education)*; CARL LUNDHOLM, *Professor (Physical Education)*; MARION C. BECKWITH, *Associate Professor (Physical Education)*; JOHN S. WALSH, *Associate Professor (Latin-Education)*; GEORGE R. THOMAS, *Associate Professor (Art-Education)*; KARL H. BRATTON, *Associate Professor (Music-Education)*; DORIS E. TYRRELL, *Associate Professor (Secretarial Studies-Education)*; *EARL H. LITTLE, *(Agriculture-Education)*; PAUL E. SCHAEFER, *Assistant Professor (Biology-Education)*; DONALD M. PERKINS, *Assistant Professor (Mathematics-Education)*; LEWIS C. GOFFE, *Instructor (English-Education)*; DANIEL G. DITTMER, *Instructor (Educational Psychology)*; RAYMOND I. BEAL, JOHN N. COTTON, GORDON L. FOX, AUSTIN J. McCaffrey, JONATHAN A. OSGOOD, *DONALD F. PIPER, HAROLD T. RAND, CHARLOTTE M. SMITH, MURRAY H. WATSON, *Consultants in Teacher Education*.

COURSES IN EDUCATION

41, (41). PRINCIPLES OF EDUCATIONAL PSYCHOLOGY. A study of such principles of behavior as are of service to teachers in their efforts to influence intelligently the intellectual, emotional, social, and personality development of their pupils. Mr. Marshall and Mr. Ellis. Open to Sophomores, Juniors, and Seniors. *Not open to students who have completed Psych. 11.* 3 rec.; 3 cr.

*Representing the State Department of Education.

EDUCATION

(42), 42. EDUCATIONAL PSYCHOLOGY OF ADOLESCENCE. The purpose of this course is to help students to acquire an appreciative understanding of adolescents and their educational needs, and of the most effective way of meeting those needs. Mr. Stowe, Mr. Marshall and Mr. Ellis. Prereq.: Ed. 41 or Psych. 11. 3 rec.; 3 cr.

51. SOCIAL BACKGROUNDS OF AMERICAN EDUCATION. The educationally significant aspects and needs of modern democratic society. Mr. Stowe. Open to Juniors, Seniors, and Graduate students. 3 rec.; 3 cr.

(52), 52. PRINCIPLES OF AMERICAN SECONDARY EDUCATION. The development and place of the secondary school in the American system of education; aims and functions of secondary education in our democracy; upward and downward extension of secondary education; articulation with lower and higher educational institutions, and with the community; the secondary school pupil; adjustment of the work of the school to meet individual needs; the offerings, both curricular and extra-curricular, of the secondary school; place and relationships of school board, superintendent, headmaster, and teachers. Mr. Stowe. Open to Juniors, Seniors, and Graduate Students. 3 rec.; 3 cr.

61, (61). PRINCIPLES AND PROBLEMS OF TEACHING IN THE SECONDARY SCHOOL. (1) Secondary-school objectives and the objectives in the teaching of secondary-school subjects; (2) principles of teaching and of directing learning incorporated in teaching which meets the needs of high-school students and attains the objectives of the secondary school; (3) secondary-school tests and the ways in which teachers are endeavoring to ascertain the extent to which their objectives are being attained; (4) class management, the purpose of which is to insure conditions favorable to the attainment of the objectives of the secondary school. Mr. Koch and Mr. Ellis. Prereq.: Ed. 41 and 42, required tests for teaching selection, and permission of the instructor. 3 rec.; 1 two-hour lab.; 4 cr.

63. AUDIO-VISUAL EDUCATION IN THE ELEMENTARY AND SECONDARY SCHOOLS. A course intended to give teachers a practical working knowledge of the uses of the various types of Audio-Visual aids. The following aids will receive particular attention: The School Journey; The School Museum; Silent and Sound Films and Projectors, Strip Films and Projectors, with and without sound disc; Transcriptions and Radio Broadcasts. This course will be centered around the problems which are common to the use of Audio-Visual aids in both elementary and secondary schools. Mr. Olney. Open to Juniors, Seniors and Graduate students. 3 cr.

65. EDUCATIONAL TESTS AND MEASUREMENTS. The nature of measurement. Classification and evaluation of tests. Standardized tests in subject-matter fields. The construction of tests in classroom prac-

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tice. Diagnosis and prognosis of pupils' aptitudes, achievements, attitudes, and interests in the public-school program with particular emphasis upon the role of tests. Mr. Marshall. Prereq.: Psych. 1 or Ed. 41. 3 rec.; 3 cr.

76. PHILOSOPHY OF EDUCATION. A study of current educational objectives and practices and the philosophical foundations upon which they are based. Mr. Ellis. Prereq.: Ed. 42, 51, 52. 2 or 3 cr.

83. EDUCATIONAL AND VOCATIONAL GUIDANCE. A first course on the principles and practices of guidance for teachers and administrators who are participating or planning to participate in a program of guidance. It will include the study of different philosophies of guidance, orientation, individual and group counseling, securing and recording information, a survey of present practices in schools. Mr. Marshall. Prereq.: Educational Psychology. Open to Juniors, Seniors and Graduate students. 2 or 3 cr.

89. MENTAL HYGIENE FOR TEACHERS. A study of the fundamental needs of human beings, with special emphasis on the mental and emotional conflicts of secondary-school students arising from the thwarting of these needs. Ways of recognizing these conflicts by their manifestations, and of helping students to resolve them will be treated extensively in the course. Attention will also be given to the mental hazards of the teaching profession. Mr. Carroll and Mr. Dittmer. Prereq.: General course in Psychology. *Not open to students who have completed Psych. 47 or 81.* 2 or 3 cr.

COURSES PRIMARILY FOR GRADUATE STUDENTS

102. PUBLIC SCHOOL ADMINISTRATION. 3 cr.

111-112. WORKSHOP IN ADMINISTRATION IN THE JUNIOR AND SENIOR HIGH SCHOOLS. 6 cr.

114. WORKSHOP IN SECONDARY-SCHOOL CURRICULUM DEVELOPMENT. 3 cr.

117. WORKSHOP IN MATERIALS OF GUIDANCE. 3 cr.

118. WORKSHOP IN PROBLEMS OF ORGANIZATION AND ADMINISTRATION OF GUIDANCE. 3 cr.

122. PROBLEMS IN THE SUPERVISION OF HIGH SCHOOL TEACHING. 3 cr.

131-132. RESEARCH PROBLEMS IN SECONDARY EDUCATION. 2-6 cr.

COURSES IN PROBLEMS IN THE TEACHING OF HIGH-SCHOOL SUBJECTS

The following courses are devoted to a study of problems of objectives, selection and organization of subject-matter, teaching and testing techniques, and classroom management in the teaching of the respective subjects. To be admitted into one of these courses the student must have completed, with a grade of at least C, Ed. 61† and,

†Except for Ag.-Ed. 92, Home Ec.-Ed. 91, and P. E. 91.

EDUCATION

in addition, the courses in the subject and related subjects designated as prerequisite to the respective courses in this group. A student desiring to be considered for Supervised Teaching must complete with a grade of at least C one of these courses in the subject in which he hopes to do supervised teaching. The satisfactory completion of two of these courses is required of students completing the University Teacher Preparation Program.

For details concerning prerequisites and nature of these courses, see descriptions given under respective subject-matter departments.

AGRICULTURE-EDUCATION (AG-Ed) 92. PROBLEMS IN THE TEACHING OF HIGH SCHOOL AGRICULTURE. Mr. Little. Open only to Seniors in Agricultural Teacher Preparation. 3 lec.; 3 cr.

ART-EDUCATION (ART-Ed) 91. PROBLEMS OF TEACHING ART IN ELEMENTARY SCHOOLS. 3 cr. Mr. Thomas.

ART-EDUCATION (ART-Ed) 92. PROBLEMS OF TEACHING ART IN SECONDARY SCHOOLS. 3 cr. Mr. Thomas.

BIOLOGY-EDUCATION (BI-Ed) 91. PROBLEMS IN THE TEACHING OF HIGH-SCHOOL BIOLOGY. 3 cr. Mr. Schaefer.

ENGLISH-EDUCATION (ENG-Ed) 91. PROBLEMS IN THE TEACHING OF HIGH-SCHOOL ENGLISH. 3 cr. Mr. Goffe.

GENERAL SCIENCE-EDUCATION (GS-Ed) 91. PROBLEMS IN THE TEACHING OF GENERAL SCIENCE. 3 cr.

HISTORY-EDUCATION (HIST-Ed) 91. PROBLEMS IN THE TEACHING OF HIGH-SCHOOL HISTORY. 3 cr. Mr. Koch.

HOME ECONOMICS-EDUCATION (HE-Ed) 91. PROBLEMS IN THE TEACHING OF HIGH-SCHOOL HOME ECONOMICS. 3 cr. Mrs. McLaughlin.

LANGUAGE-EDUCATION (LANG-Ed) 91. PROBLEMS IN THE TEACHING OF FOREIGN LANGUAGES IN THE HIGH SCHOOL. 3 cr. Mr. Parker.

LATIN-EDUCATION (LAT-Ed) 91, 92. PROBLEMS IN THE TEACHING OF HIGH-SCHOOL LATIN. 3 cr. Mr. Walsh.

MATHEMATICS-EDUCATION (MATH-Ed) 91. PROBLEMS IN THE TEACHING OF HIGH-SCHOOL MATHEMATICS. 3 cr. Mr. Perkins.

PHYSICAL EDUCATION (P.E.-Ed.) 91. PROBLEMS IN THE TEACHING OF PHYSICAL EDUCATION FOR WOMEN. 4 cr. Miss Beckwith.

PSYCHOLOGY-EDUCATION (PSYCH-Ed) 91. PROBLEMS IN THE TEACHING OF HIGH-SCHOOL PSYCHOLOGY. 3 cr. Mr. Stowe.

COURSES IN SUPERVISED TEACHING

This work is required in the Teacher Preparation Program. It is open only to students whose applications are approved by the Head of the Department of Education and the Supervisor of Student Teaching in the subject or subjects in which the applicant desires to do

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supervised teaching. Applications should be filed in the office of the Department of Education, on or before November 15 of the academic year in which the supervised teaching is to be done. No applications will be considered unless the applicant has completed with a grade of at least C the following courses in Education: 42, 51, 52, and 61, and, with an average grade of C or better, at least 18 semester credits in the subject-matter field in which he desires to teach under supervision. The applicant must also complete with a grade of at least C a course in the problems of teaching the subject in which he desires to do supervised teaching.

Students may be enrolled for from 6 to 12 credits of work in Supervised Teaching in the second semester of the academic year. Students registered in the College of Liberal Arts may count no more than 9 semester credits in Supervised Teaching toward the fulfillment of the major requirements in Education.

EDUCATION-AGRICULTURE (ED-AG) 93. SUPERVISED TEACHING IN HIGH-SCHOOL AGRICULTURE. Prereq.: Senior standing in Ag-Ed Curriculum.

EDUCATION-ART (ED-ART) 94. SUPERVISED TEACHING IN SECONDARY-SCHOOL ART. Prereq.: ART-Ed 92.

EDUCATION-BIOLOGY (ED-BI) 93, 94. SUPERVISED TEACHING IN HIGH-SCHOOL BIOLOGY. Prereq.: BI-Ed 91.

EDUCATION-COMMERCE (ED-CS) 94. SUPERVISED TEACHING IN HIGH-SCHOOL COMMERCIAL SUBJECTS.

EDUCATION-ECONOMICS (ED-ECON) 94. SUPERVISED TEACHING IN HIGH-SCHOOL ECONOMICS. Prereq.: HIST-Ed 91.

EDUCATION-ENGLISH (ED-ENG) 94. SUPERVISED TEACHING IN HIGH-SCHOOL ENGLISH. Prereq.: ENG-Ed 91.

EDUCATION-FRENCH (ED-FR) 94. SUPERVISED TEACHING IN HIGH-SCHOOL FRENCH. Prereq.: LANG-Ed 91.

EDUCATION GENERAL SCIENCE (ED-GS) 94. SUPERVISED TEACHING IN GENERAL SCIENCE. Prereq.: GS-Ed 91.

EDUCATION-HISTORY (ED-HIST) 94. SUPERVISED TEACHING IN HIGH-SCHOOL HISTORY. Prereq.: HIST-Ed 91.

EDUCATION-HOME ECONOMICS (ED-HE) 94. SUPERVISED TEACHING IN HIGH-SCHOOL HOME ECONOMICS. Prereq.: HE-Ed 91.

EDUCATION-LATIN (ED-LAT) 94. SUPERVISED TEACHING IN HIGH-SCHOOL LATIN.

EDUCATION-MATHEMATICS (ED-MATH) 94. SUPERVISED TEACHING IN HIGH-SCHOOL MATHEMATICS. Prereq.: MATH-Ed 91.

EDUCATION-MUSIC (ED-MUS) 93. SUPERVISED TEACHING IN ELEMENTARY SCHOOL MUSIC.

ELECTRICAL ENGINEERING

EDUCATION-MUSIC (ED-MUS) 94. SUPERVISED TEACHING IN SECONDARY SCHOOL MUSIC.

EDUCATION-PHYSICAL EDUCATION (ED-PE) 93, (93). DIRECTED TEACHING IN PHYSICAL EDUCATION.

EDUCATION-PHYSICAL EDUCATION (ED-PE) 94. SUPERVISED TEACHING OF PHYSICAL EDUCATION IN THE FIELD. (Not offered in 1948-1949.)

EDUCATION-SOCIOLOGY (ED-SOC) 94. SUPERVISED TEACHING IN HIGH-SCHOOL SOCIOLOGY. Prereq.: HIST-ED 91.

ELECTRICAL ENGINEERING

LEON W. HITCHCOCK, *Professor*; WILLIAM B. NULSEN, *Associate Professor*; JAMES C. MACE, *Associate Professor*; GILBERT B. GOULD, *Instructor*; GEORGE W. WALSH, *Instructor*; ROBERT E. ANDERSON, *Instructor*.

1-2. ELECTRICAL ENGINEERING. Direct current circuits and machinery. Mr. Gould. Prereq.: Math. 6. Required of Sophomores in E.E. E.E. 1: 2 rec.; 1 lab.; 3 cr. E.E. 2: 3 rec.; 1 lab.; 4 cr.

12. ILLUMINATION. Photometry, light sources, lighting applications, wiring methods, and National Electrical Code Rules. Mr. Nulsen. Required of Seniors in E.E. Elective for students who have completed E.E. 33, or 38. 2 rec.; 2 cr.

13. CIRCUIT THEORY. Single phase and polyphase circuits, network theorems, and wave analysis. Mr. Nulsen. Prereq.: E.E. 2. Required of Juniors in E.E. 2 rec.; 2 cr.

14. ELECTRONICS. Fundamental principles of electronics, thermionic emission, characteristics of vacuum tubes, Class A amplifiers, and harmonic analysis. Mr. Mace. Prereq.: E.E. 13. Required of Juniors in E.E. 2 rec.; 1 lab.; 3 cr.

15, 16, 17, 18. STUDENT BRANCH OF THE AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS. A student organization conducted in accordance with the by-laws of the Institute with meetings given a place on the student's class schedule. Each student is required to present and discuss an approved subject. At times the meeting may take the form of a debate, an address by an outside lecturer, or a motion picture of an instructive nature. Students in this course must become student members of the A.I.E.E. or the I.R.E. and must subscribe to a magazine selected by the Department. Required of Juniors and Seniors in E.E. Elective for Freshmen and Sophomores majoring in E.E. 1 rec.; no cr.

23-24. LABORATORY. Operation and test of direct and alternating current equipment; laboratory practice and report presentation. Mr. Anderson. Prereq.: E.E. 2. Required of Juniors in E.E. 1 lab.; 2 cr.

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25. LABORATORY. A continuation of E.E. 24. Mr. Nulsen. Prereq.: E.E. 24. Required of Seniors in E.E. 2 lab.; 4 cr.

31. CIRCUITS AND APPLIANCES. Electric circuit theory, wiring methods, efficiency, protection of circuits and equipment, national electrical code, meters, motors, illumination, signal circuits, and telephones. Mr. Hitchcock. Prereq.: Hotel Administration 21, 22 or Physics 2. 3 rec.; 1 lab.; 4 cr.

33, (33). FUNDAMENTALS OF ELECTRICITY. Direct and alternating current circuits, machines, and equipment. Mr. Hitchcock and Mr. Nulsen. Prereq.: Phys. 8. Required of Juniors in C.E. and Seniors in Chem. E. 3 rec.; 1 lab.; 4 cr.

37-38. ELECTRICAL MACHINERY. Direct and alternating current circuits, theory and characteristics of electric motors and generators, starting and control equipment. Mr. Walsh. Prereq.: Phys. 8. Required of Juniors in Mech. E. 3 rec.; 1 lab.; 4 cr.

42. PRINCIPLES AND APPLICATIONS OF ELECTRON TUBES. Vacuum tubes, vacuum tube amplifiers, gaseous triodes, photo-electric cells and their application in industry. Mr. Mace. Prereq.: E.E. 33, or 37. Elective for students not registered in the Electrical Engineering Curriculum. 3 rec.; or 2 rec. and 1 lab.; 3 cr.

53-54. ELECTRICAL ENGINEERING. Alternators, transformers, induction motors, regulators, synchronous motors, converters, and rectifiers. Mr. Hitchcock and Mr. Anderson. Prereq.: E.E. 2. Required of Juniors in E.E. 3 rec.; 3 cr.

55. ELECTRICAL ENGINEERING. Transmission line fundamentals, T and Pi sections, and filters. Mr. Nulsen. Prereq.: E.E. 13. Required of Seniors in E.E. 3 rec.; 3 cr.

57. ELECTRONICS. Modulation, detection, Class B and Class C amplifiers, thyratron control circuits, and power supplies. Mr. Mace. Prereq.: E.E. 14. Required of Seniors in E.E. 2 rec.; 1 lab.; 3 cr.

58. RADIO AND WIRE COMMUNICATION. Telephone measurements, long line measurements, oscillators, radio transmitters and receivers. Mr. Mace. Prereq.: E.E. 57. Elective for Seniors in E.E. 3 rec.; 1 lab.; 4 cr.

60. ADVANCED CIRCUIT THEORY. Steady state and transient analysis, derivation of fundamental formulas and constants. Mr. Nulsen. Prereq.: E.E. 55. Elective for Seniors in E.E. 3 rec.; 1 conference period; 4 cr.

76. LABORATORY. Advanced laboratory testing and special problems. The student works on problems of his own selection which have been outlined by him and have received approval. This may be in

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the form of a semester thesis, or a series of original experiments. Mr. Nulsen. Prereq.: E.E. 25. Elective for selected Seniors in E.E. 4 lab.; 4 cr. (Not offered in 1948-1949.)

78. ADVANCED ELECTRONICS. Frequency modulation, U.H.F. tubes, U.H.F. measurements, special wave forming circuits, and problems in transients. Mr. Mace. Prereq.: E.E. 57. Elective for Technology Seniors with permission of Department. 3 rec.; 1 lab.; 4 cr.

COURSES PRIMARILY FOR GRADUATE STUDENTS

101, 102. ELECTRIC AND MAGNETIC CIRCUITS. A treatment of unbalanced circuits by the use of symmetrical components. Transformer and reactor analysis. Mr. Nulsen. 3 rec.; 3 cr.

103, 104. PROPAGATION OF ELECTRO-MAGNETIC WAVES. Antennas and waveguides. Mr. Mace. 3 rec.; 3 cr.

105. ADVANCED COMMUNICATION. Circuit Theory. Mr. Mace. 3 rec.; 1 lab.; 4 cr.

THESIS. Credits to be arranged. Mr. Mace and Mr. Nulsen. 3-5 cr.

ENGLISH

SYLVESTER H. BINGHAM, *Professor*; HAROLD H. SCUDDER, *Professor*; WILLIAM G. HENNESSY, *Professor*; CARROLL S. TOWLE, *Professor*; LUCINDA P. SMITH, *Associate Professor Emeritus*; EDMUND A. CORTEZ, *Associate Professor of Speech*; ROBERT G. WEBSTER, *Associate Professor*; G. HARRIS DAGGETT, *Assistant Professor*; J. DONALD BATCHELLER, *Assistant Professor of Speech*; JOHN H. SCHULTZ, *Assistant Professor*; JOHN G. RIDEOUT, *Assistant Professor*; MAX S. MAYNARD, *Instructor*; JOHN C. RICHARDSON, *Instructor*; LEWIS C. GOFFE, *Instructor*; F. VERNON GETTY, *Instructor*; ARTHUR S. HARRIS, *Instructor*; LEWIS H. PALMER, *Instructor*; ELLIS SHORB, *Instructor*; LEO STOLLER, *Instructor*; PHILIP D. WHEATON, *Instructor*.

REMEDIAL COURSES

*A. REMEDIAL WORK IN WRITING. Required of all students whose attainments in this subject are found to be unsatisfactory. Assignment to classes from which the students may be excused either at the end of the semester or at the end of the year. 3 rec.; no credit.

B. REMEDIAL WORK IN SPEECH. See the section headed *Speech*.

*C. REMEDIAL WORK IN READING. Intensive drill in reading skills for six weeks. Offered twice each semester. 3 rec.; no credit. Mr. Webster.

*Any student may be recalled and reassigned to an instruction group at any time in his four years at college upon report of any member of the Faculty that his work in composition or in reading is deficient.

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COURSES IN ENGLISH

1-2. FRESHMAN ENGLISH. The training of students to write correctly and with force and to read with appreciation and discernment the chief types of literature. The staff of the Department under the chairmanship of Mr. Webster. 3 rec.; 3 cr.

12. THE BIBLE AS LITERATURE. A study of the various literary types found in the Bible and a survey of the influence of the Bible on English literature. Mr. Schultz. For Sophomores, Juniors, and Seniors. 3 rec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

13, 14. AN INTRODUCTION TO ENGLISH LITERATURE. The development of English literature from its beginnings to the twentieth century by means of selected readings. Mr. Webster and other members of the staff. For Sophomores, Juniors, and Seniors. 3 rec.; 3 cr.

15, 16. SURVEY OF AMERICAN LITERATURE. Mr. Scudder. For Sophomores, Juniors, and Seniors. 3 rec.; 3 cr.

22. WRITING FOR THE NEWSPAPER. Mr. Webster. For Sophomores, Juniors, and Seniors. 3 rec.; 3 cr.

23, (23). WRITING OF TECHNICAL REPORTS. Mr. Webster and Mr. Schultz. Required of Seniors in Agriculture and in Mechanical, Electrical, and Civil Engineering and in Building Construction. 1 rec.; 1 lec.; 2 cr.

25-26. ADVANCED COMPOSITION. Practice with compositions of varying lengths. Class discussions with illustrative readings. Weekly conferences. Mr. Towle. For Sophomores, Juniors, and Seniors. Prereq.: Engl. 1-2. 3 lec. or rec.; 3 cr.

27 (27). ENGLISH GRAMMAR. Mr. Goffe. Limited to students in the teacher-preparation curriculums. 3 rec.; 3 cr.

43, 44. READING FOR THOUGHT. Analysis of the thought and structure of three forms of writing: exposition, description, and narration. Mr. Bingham. For Sophomores, Juniors, and Seniors. 3 rec.; 3 cr.

53, 54. WRITING AS AN ART. The study and practice of forms of writing, together with an examination of the history of literary philosophy. Practice in mutual criticism through class workshop discussions and written comment. Freedom in selection and pursuance of writing interests. Individual conferences. Mr. Towle. For Juniors, Seniors, and Graduate Students. Prereq.: Engl. 25 or its equivalent. 2 lec.; 1 rec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

Great Figure Group

55, 56. CHAUCER. Mr. Rideout. For Juniors, Seniors, and Graduate Students. 3 rec.; 3 cr.

ENGLISH

*57, 58. SHAKESPEARE'S PLAYS. The major histories, comedies, and tragedies. Mr. Hennessy. For Juniors, Seniors, and Graduate Students. 3 lec.; 3 cr.

59. MILTON. Mr. Schultz. For Juniors, Seniors, and Graduate Students. 3 lec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

60. BOSWELL'S JOHNSON. Mr. Scudder. For Juniors, Seniors, and Graduate Students. 3 lec.; 3 cr. (Given in alternate years; offered in 1948-1949.)

61. WORDSWORTH. Mr. Rideout. For Juniors, Seniors, and Graduate Students. 3 lec.; 3 cr. (Given in alternate years; offered in 1948-1949.)

62. BROWNING. Mr. Daggett. For Juniors, Seniors, and Graduate Students. 3 lec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

The Century or Period Group

63, 64. THE RENAISSANCE AND ENGLISH LITERATURE, 1500-1600. Mr. Schultz. For Juniors, Seniors, and Graduate Students. 3 lec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

65, 66. ENGLISH LITERATURE IN THE SEVENTEENTH CENTURY. Mr. Towle. For Juniors, Seniors, and Graduate Students. 3 lec.; 3 cr. (Given in alternate years; offered in 1948-1949.)

67, 68. ENGLISH LITERATURE IN THE EIGHTEENTH CENTURY. Mr. Maynard. For Juniors, Seniors, and Graduate Students. 3 lec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

69, 70. THE ENGLISH ROMANTIC PERIOD. Wordsworth, Coleridge, Lamb; Byron, Shelley, Keats, Hazlitt, DeQuincy. Mr. Daggett and Mr. Rideout. 3 lec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

71, 72. VICTORIAN PROSE AND POETRY. Major non-fictional prose from Carlyle to Stevenson and major poetry from Tennyson to Hardy. Mr. Hennessy. For Juniors, Seniors, and Graduate Students. 3 lec.; 3 cr. (Given in alternate years; offered in 1948-1949.)

73, 74. BRITISH LITERATURE OF THE TWENTIETH CENTURY. Mr. Daggett. For Juniors, Seniors, and Graduate Students. 3 lec.; 3 cr. (Given in alternate years; offered in 1948-1949.)

The Advanced American Literature Group

75. NEW ENGLAND RENAISSANCE. Emerson, Thoreau, and other transcendentalists. Mr. Scudder. For Juniors, Seniors, and Graduate Students. 3 lec.; 3 cr. (Given in alternate years; offered in 1948-1949.)

*English 57, 58 is a required course for English majors and may not be used in fulfillment of the requirement of one semester in the Great Figure group.

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76. AMERICAN NOVEL IN THE NINETEENTH CENTURY. Mr. Scudder. For Juniors, Seniors, and Graduate Students. 3 lec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

77. AMERICAN POETRY OF THE NINETEENTH CENTURY. Mr. Scudder. For Juniors, Seniors, and Graduate Students. 3 lec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

78. AMERICAN HUMOR. Mr. Scudder. For Juniors, Seniors, and Graduate Students. 3 lec.; 3 cr. (Given in alternate years; offered in 1948-1949.)

79, 80. AMERICAN LITERATURE OF THE TWENTIETH CENTURY. Mr. Towle. For Juniors, Seniors, and Graduate Students. 3 lec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

The Type Group

81, 82. INTRODUCTION TO ENGLISH DRAMA. The development of English drama, exclusive of Shakespeare, from the Middle Ages to the present. Mr. Hennessy. For Juniors, Seniors, and Graduate Students. 3 lec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

83, 84. THE ENGLISH NOVEL OF THE EIGHTEENTH AND NINETEENTH CENTURIES. Mr. Bingham. For Juniors, Seniors, and Graduate Students. 3 lec.; 3 cr.

*85, 86. A SURVEY OF ENGLISH AND AMERICAN LITERATURE. The Department, under the direction of the Chairman. For Seniors and Graduate Students. 3 lec.; 3 cr.

91. ENGLISH-EDUCATION. PROBLEMS IN THE TEACHING OF HIGH SCHOOL ENGLISH. Principles and methods of teaching English literature and composition in secondary schools. For all students who plan to teach English in secondary schools and for students majoring in Language, History, or Education. Mr. Goffe. Prereq.: English 14; English 16; one semester of English 57, 58; and one semester of English 25, English 35, or English 43, 44; a demonstration of English grammar, either by the satisfactory completion of English 27 or by examination; and Education 61. 3 lec. or rec.; 3 cr.

COURSES PRIMARILY FOR GRADUATE STUDENTS

A student taking a course primarily for Graduate Students must register for the graduate course and pass, in partial fulfillment, with a grade of B or better, the corresponding 51-90 undergraduate course; at the same time, he must do additional work assigned by his instructor and prepare a paper on an agreed subject connected with his study. An account of the additional work must be turned in to the

*This course does not carry major credit and cannot be counted toward the master's degree.

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Chairman of the Department no later than two weeks after the commencement of the course, and the paper must be in the hands of the Chairman at least two weeks before the end of the course. A student may not register for a graduate course if he has previously taken the corresponding undergraduate course.

155, 156. CHAUCER. 3 lec.; 3 cr.

157, 158. SHAKESPEARE. 3 lec.; 3 cr.

159. MILTON. 3 lec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

160. BOSWELL'S JOHNSON. 3 lec.; 3 cr. (Given in alternate years; offered in 1948-1949.)

161. WORDSWORTH. 3 lec.; 3 cr. (Given in alternate years; offered in 1948-1949.)

162. BROWNING. 3 lec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

163, 164. THE RENAISSANCE AND ENGLISH LITERATURE, 1500-1600. 3 lec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

165, 166. ENGLISH LITERATURE IN THE SEVENTEENTH CENTURY. 3 lec.; 3 cr. (Given in alternate years; offered in 1948-1949.)

167, 168. ENGLISH LITERATURE IN THE EIGHTEENTH CENTURY. 3 lec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

169, 170. THE ENGLISH ROMANTIC PERIOD. 3 lec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

171, 172. VICTORIAN PROSE AND POETRY. 3 lec.; 3 cr. (Given in alternate years; offered in 1948-1949.)

173, 174. BRITISH LITERATURE OF THE TWENTIETH CENTURY. 3 lec.; 3 cr. (Given in alternate years; offered in 1948-1949.)

175. THE NEW ENGLAND RENAISSANCE. 3 lec.; 3 cr. (Given in alternate years; offered in 1948-1949.)

176. THE AMERICAN NOVEL IN THE NINETEENTH CENTURY. 3 lec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

177. AMERICAN POETRY OF THE NINETEENTH CENTURY. 3 lec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

178. AMERICAN HUMOR. 3 lec.; 3 cr. (Given in alternate years; offered in 1948-1949.)

179, 180. AMERICAN LITERATURE OF THE TWENTIETH CENTURY. 3 lec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

181, 182. AN INTRODUCTION TO ENGLISH DRAMA. 3 lec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

183, 184. THE ENGLISH NOVEL OF THE EIGHTEENTH AND NINETEENTH CENTURIES. 3 lec.; 3 cr.

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SPEECH

Mr. Cortez, *in charge*.

THE SPEECH CLINIC. For any member of the University who wishes to have his voice and speech examined and corrected.

*B. REMEDIAL WORK IN SPEECH. Required of all students whose speech is found to be unsatisfactory.

33, 34. DISCUSSION AND DEBATE. First semester: the proposition and its main issues, sources and tests of evidence, construction of the argumentative brief, laws of reasoning. Second semester; practice in discussion and debate, varsity debating, parliamentary procedure. For Sophomores, Juniors, and Seniors. Mr. Wheaton. Prereq.: Engl. 35 or its equivalent. 3 rec.; 3 cr.

35, (35). PUBLIC SPEAKING. The fundamental basic appeals and audience psychology; extemporaneous and impromptu speaking for every occasion. Mr. Cortez, Mr. Batcheller, Mr. Wheaton. For Sophomores, Juniors, and Seniors. 3 rec.; 3 cr.

36. SPEECH FOR TEACHERS. Constant practice in reading announcements, short stories, and selections of prose and verse. Emphasis upon oral interpretation. Prepared talks on methods of reading before the class. Voice analysis and recording. Mr. Cortez. Permission of the instructor. Recommended prereq.: Engl. 35 or 47. 3 rec.; 3 cr.

39. RADIO SPEAKING. Practice in the preparation and delivery of radio continuity, readings, skits, talks, and announcements; microphone technique. Mr. Cortez. For Sophomores, Juniors, and Seniors. Prereq.: Permission of the instructor. 3 rec.; 3 cr.

47, 48. DRAMATICS WORKSHOP. First semester: the fundamentals of acting, stage direction, stage deportment, and the analysis and development of roles in plays. Second semester: the methods of choosing, casting, and directing plays. Practical experience in productions. Mr. Batcheller. For Sophomores, Juniors, and Seniors. Prereq.: Permission of the instructor. 1 rec.; 2 lab.; 3 cr.

ENTOMOLOGY

JAMES G. CONKLIN, *Professor*; WALTER C. O'KANE, *Professor Emeritus*;
ROBERT L. BLICKLE, *Assistant Professor*.

2. ELEMENTARY ENTOMOLOGY. An introduction to Entomology in its broad aspects. The structure, biology, and classification of insects. Each student is required to make an insect collection. Mr. Conklin. 2 lec.; 1 lab.; 3 cr.

*Any student may be recalled and reassigned to an instruction group at any time in his four years at college upon report of any member of the Faculty that his work in speech is deficient.

ENTOMOLOGY

41. INSECTS OF ORCHARD AND GARDEN. Studies of the life histories and habits of important insect pests of orchard, garden, and certain field crops. Methods of control. Apparatus for applying insecticides. Mr. Conklin. 2 lec.; 1 lab.; 3 cr.

54. MEDICAL ENTOMOLOGY. Insects and arachnids in relation to public health. The more important disease carriers, their biologies, and means of control. Adapted especially for students interested in public health or medicine. Mr. Blickle. Elective for Juniors and Seniors. 2 lec.; 1 lab.; 3 cr.

55. HOUSEHOLD INSECTS, STORED PRODUCTS INSECTS. The problems of pest prevention and control in buildings. Pests of fabrics and clothing. Insects affecting foodstuffs. Termites and other insects attacking wooden structures. Mr. Conklin. 1 lec.; 1 lab.; 2 cr. (Given in alternate years; not offered in 1948-1949.)

56. FOREST INSECTS. Principles of Forest Entomology. Life histories and habits of the more destructive forest insects. Forest insect control. Adapted especially for forestry students. Mr. Conklin. Prereq.: Ent. 2. 1 lec.; 1 lab.; 2 cr.

57-58. ADVANCED ENTOMOLOGY. The anatomy and physiology of insects. Systematic Entomology. Mr. Conklin, Mr. Blickle. Open to others than Ent. majors by permission of the Head of the Department. 2 lec.; 2 lab.; 4 cr.

59-60. ADVANCED ECONOMIC ENTOMOLOGY. Problems in applied Entomology. The literature of Economic Entomology. Investigational methods. Studies of the specialized phases of Entomology. Mr. Conklin, Mr. Blickle. Required of Ent. majors. Open to others than Ent. majors by permission of the Head of the Department. 1 to 3 cr.

COURSES PRIMARILY FOR GRADUATE STUDENTS

101, 102. GRADUATE ENTOMOLOGY. Mr. Conklin, Mr. Blickle. Hours and credits to be arranged.

103, 104. GRADUATE ENTOMOLOGY. Mr. Conklin, Mr. Bickle. Hours and credits to be arranged.

FINE ARTS

(See THE ARTS, page 181.)

UNIVERSITY OF NEW HAMPSHIRE

FORESTRY

CLARK L. STEVENS, *Professor*; LEWIS C. SWAIN, *Assistant Professor*;
CHARLES M. MATTHEWS, *Instructor*; CHARLES L. McLAUGHLIN,
Instructor.

1. MANAGEMENT OF FARM WOODLANDS. Forestry principles as applied to the orderly handling of farm woodlots. Mr. Swain. Elective for all students, except Forestry majors. 2 lec.; 1 lab.; 3 cr.

2, 3, 4, 5, 6, 7, 8. FORESTRY PRACTICE. Practical work in the University Forest, expected of all foresters. The student gains experience in various forestry operations, and progresses from laborer to supervisor. Mr. Stevens and others. 1 lab.; 1 cr.

21. FORESTRY ECOLOGY PROBLEMS. Summer camp course.* Readings and field work on problems connected with succession and the development of forest vegetation. Designed to fit the needs of the individual student. Mr. Stevens. Elective for any student. Forty hours per week for 8 weeks. 10 cr.

26. WOOD IDENTIFICATION. The uses of lumber; physical properties and identification of the commercially important woods. Mr. Swain. 2 lec.; 1 lab.; 3 cr.

28. MENSURATION AND SURVEYING. Theory and practice in the elementary principles of land surveying, mapping, and timber measurements as they apply to the field of forestry. Study and application of basic statistical theory to forest mensuration. Mr. Matthews. 2 lec.; 2 lab.; 4 cr. Prereq.: Math. 2 or 6.

29-30. SILVICULTURE. The art of producing and tending a forest. Seed collection, storage, and testing; nursery practice; forest plantations; natural regeneration, intermediate cuttings; silvicultural practice. Mr. Stevens. For foresters. Elective for others with approval of the instructor. 2 lec.; 1 lab.; 3 cr.

31, 32. FOREST UTILIZATION. Methods of logging and milling in the chief lumber-producing regions of the United States; forest products, their manufacture and marketing; with special problems of the lumber business. Mr. Swain. 2 lec.; 1 lab.; 3 cr.

33. FOREST PROTECTION. Protection of the forest from such enemies as fire, insects, fungi, trespass, and climatic extremes; also the construction of forest improvements associated with protection plans. Mr. Swain. Recommended for Sophomores in Forestry. Elective for others with approval of the instructor. 2 lec.; 1 lab.; 3 cr.

*See description of Summer Camp, page 47.

FORESTRY

34. FISH AND GAME MANAGEMENT. Designed to acquaint the student with the fundamental principles underlying the management of wild life as a forest crop. Mr. McLaughlin. For students in Game Management Group. Elective for others with approval of the instructor. 2 lec.; 1 lab.; 3 cr.

35-36. SPECIAL PROBLEMS. Work to be arranged according to the needs of individual students. Mr. Stevens, Mr. Swain, Mr. Matthews, Mr. McLaughlin. Prereq.: Forestry 26, 28, and 29. 2 lec.; 2 or 3 cr.

37. FOREST RECREATION. Principles and methods for planning, designing, and administering public and semi-public forest recreational areas. Mr. McLaughlin. Prereq.: Permission of the instructor. 2 lec.; 1 lab.; 3 cr.

39-40. FOREST MANAGEMENT. Management of woodlots and large forest tracts for the purposes of gaining the largest immediate and future returns. Preparation of working plans to coordinate forest operations. Mr. Matthews. Prereq.: Forestry 26; 27-28; 29-30; 42. 2 lec.; 2 lab.; 4 cr.

41. GAME MANAGEMENT FIELD PRACTICE. Summer Camp Course.* Field work on the University Forest at Passaconaway, N. H., and on a game management area of the White Mountain National Forest. Mr. McLaughlin and others. For students in Game Management Group. Elective for others by permission of the instructor. Forty hours per week for 8 weeks. 10 cr.

42. SUMMER CAMP.* Practice in forest mapping and surveying; measurement of forest products; timber estimating; and studies of growth and yield of the commercial tree species of New England. Mr. Matthews. Forty hours per week for 8 weeks. 10 cr.

43. ADVANCED MENSURATION. The study of volume, growth, and yield in the forest. Extensive treatment of the graphic and statistical solution of forest measurements based on three and four variables. Mr. Matthews. Prereq.: For. 28, 42. 1 lec.; 2 lab.; 3 cr.

44. FOREST ECONOMICS AND FINANCE. Application of economics and finance to the forest business. Nature of forest investments, valuation of timber and forest lands, forest taxation, and forest insurance. Prereq.: Math. 2 or 6; Econ. 1. Mr. Matthews. 3 lec.; 3 cr.

53. ADVANCED GAME MANAGEMENT. Summer Camp Course.* Special problems in the management of fish and game. Open to advanced students or to those who show unusual promise in the field of research. Mr. McLaughlin and others. Prereq.: Permission of the instructor. Forty hours per week for 8 weeks. 10 cr.

FRENCH

(See LANGUAGES, pages 239-240.)

*See Camp description, page 47.

UNIVERSITY OF NEW HAMPSHIRE

GEOGRAPHY

(See page 221.)

GEOLOGY

T. RALPH MEYERS, *Associate Professor*; DONALD H. CHAPMAN, *Associate Professor*; GLENN W. STEWART, *Assistant Professor*; WALLACE E. MCINTYRE, *Instructor*; HAROLD A. WEBSTER, JR., *Instructor*

GEOLOGY

1-2. PRINCIPLES OF GEOLOGY. The earth and its history. A consideration of land forms and a discussion of the materials and structures of the earth's crust. The interpretation of past geologic events, and their effect on the development of life forms. Messrs. Meyers, Chapman, and Stewart. 3 lec. or rec.; 1 lab.; 4 cr. *This course cannot be used to satisfy major requirements.*

7, (7). GENERAL GEOLOGY. A general introductory course in Physical Geology. The structures and materials of the earth's crust and the forces which have produced and altered them. Mr. Stewart. For students in Technology and Agriculture. Open to Liberal Arts students by permission only. 2 lec. or rec.; 2 cr.

31. PHYSIOGRAPHY. The forces producing the present aspect of the land surface, particularly that of New England. Special emphasis on the work of running water, glaciers, and marine agents. Field trips during the fall season. Mr. Chapman. Prereq.: Geol. 2 or Geog. 3. 3 lec.; or rec.; 1 lab.; 4 cr.

32. GLACIAL GEOLOGY. A study of the characteristics of existing glaciers and an interpretation of Pleistocene glacial features. The abundant and varied evidence of glaciation in northeastern North America and Baltic Europe will be emphasized. New Hampshire examples of both Alpine and continental glaciation will be studied in the field. Mr. Chapman. Prereq.: Geol. 31, 2 lec.; 1 lab.; 3 cr.

33. STRUCTURAL GEOLOGY. An advanced study of the relatively local structural units of the earth's crust and the mechanics of their formation. The recognition and interpretation of the different types of folds, faults, joints, unconformities, plutons, and other structures will be discussed with special emphasis on the significance of primary features, drag folds, and secondary foliation and lineation. Examples of some structural features will be demonstrated on field trips in the Durham area. Problems related to folds, faults, and structure contours will be assigned in the laboratories. Mr. Stewart. Prereq.: Geol. 1 or 7, Math. 13 or equivalent. 3 lec. or rec.; 1 lab.; 4 cr.

34. ELEMENTS OF PETROLOGY. A systematic study of rock types together with their modes of occurrence and problems of origin. Mr. Stewart. Prereq.: Geol. 1 or 7. 2 lec.; 1 lab.; 3 cr.

GEOLOGY

35-36. MINERALOGY. The minerals that make up the earth's crust: crystals; minerals and their determination by means of physical and chemical characteristics; and mineral associations to form rocks. Mr. Meyers. Prereq.: One course in Geol. or one course in Chem. 2 lec. or rec.; 1 lab.; 3 cr.

39-40. PALEONTOLOGY. The history, development, and morphology of the various groups of animals, and, to a lesser extent, plants, as recorded by fossils found in the rocks of the earth's crust. Mr. Stewart. Prereq.: One year's work in Geol. or Zoöl. 2 lec. or rec.; 1 lab.; 3 cr. (Given in alternate years; offered in 1948-1949.)

53, 54. ECONOMIC GEOLOGY. First semester: the types of coal and their occurrence in the United States; petroleum, the structures in which it is found, and the distribution and geology of oil fields, especially in the United States; industrial minerals and their utilization. Second semester: the metals, their ores, and the geology of important ore deposits. Mr. Meyers. Prereq.: One year's work in Geol. 3 lec. or rec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

42. FIELD GEOLOGY. This course is for the student who desires to acquaint himself with some basic geological field techniques, and the preparation of geological maps and reports from field data. General methods of mapping will be demonstrated but specific instructions will be given in the preparation of geological maps and sections by means of pace and compass, hand level, aneroid barometer, plane table, and aerial photographic methods. Problems in areal geology and in mine mapping will be included. Mr. Stewart. Prereq.: Geol. 33. 1 lec. and 1 lab.; 2 cr.

57, (57). GEOLOGICAL PROBLEMS. Special problems by means of conferences, assigned readings, and field work, fitted to individual needs. Messrs. Meyers, Chapman, and Stewart. Prereq.: Permission of the instructor. 1-5 cr. This course may be taken more than once.

GEOGRAPHY

Register for these courses as Geog. 1, etc.

Geog. 1, 2 cannot be used to satisfy Science requirements, nor major requirements. Geog. 3 and Geog. 10 cannot be used to satisfy Science requirements.

1, 2. GEOGRAPHY OF THE WESTERN AND EASTERN HEMISPHERES. A general survey of the geography of the earth, with emphasis upon its physical aspects. First semester: Western Hemisphere. Second semester: Eastern Hemisphere. Messrs. Chapman and McIntyre. 2 lec. or rec.; 2 cr.

3. PHYSICAL GEOGRAPHY. A study of the physical elements of Geography and their relationship to man. Mr. McIntyre. 3 lec. or rec.; 3 cr.

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4. **ECONOMIC GEOGRAPHY.** The resources of the continents and the relationship of these with the principal activities of man. A study of fishing, agriculture, mining, industry, transportation, and commerce is included. With Geog. 3, this course completes a year's basic work in Geography. Mr. McIntyre. Open to all students. 3 lec. or rec.; 3 cr.

5. **POLITICAL GEOGRAPHY.** A study of the geographic foundations of the state, of the influence of geography on the political organization of the world in war and peace. Special emphasis on recent schools of thought, such as German geopolitics, British, French, and American political geography. Mr. McIntyre. Prereq.: A college course in geography or permission of the instructor. For Sophomores, Juniors, and Seniors. 3 lec. or rec.; 3 cr.

10. **GEOGRAPHY OF NORTH AMERICA.** The North American continent and its physical aspects. The weather and climate of the continent. The countries, treated regionally. Intensive study of the physical geography of New England. Mr. McIntyre. For Sophomores, Juniors, and Seniors. 3 lec. or rec.; 3 cr. (Given in alternate years; offered in 1948-1949.)

12. **GEOGRAPHY OF LATIN AMERICA.** The physical and economic geography of Mexico, Central America, and the South American countries, treated regionally. Mr. McIntyre. Prereq.: A college course in geography or permission of instructor. For Sophomores, Juniors, and Seniors. 3 lec. or rec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

METEOROLOGY

Register for these courses as Met. 1, etc.

Met. 1, 2 cannot be used to satisfy Science requirements, nor major requirements.

1. **THE WEATHER.** The interpretation of atmospheric phenomena; the heating and circulation of the atmospheres and the nature and movement of the air masses which influence the weather of North America and particularly New England. Mr. Chapman. 2 lec. or rec.; 2 cr.

2. **CLIMATES OF THE WORLD.** Classification of climates of the world. Examples and brief descriptions of major climatic types, and their influence on the life of man. Mr. Chapman. 2 lec. or rec.; 2 cr.

57, (57). **METEOROLOGICAL PROBLEMS.** Special problems by means of conferences, assigned readings, and laboratory work, fitted to individual needs. Mr. Chapman. Prereq.: Permission of the instructor. 1-5 cr. *This course may be taken more than once.*

GERMAN

(See LANGUAGES, pages 240-241.)

GOVERNMENT

GOVERNMENT

NORMAN ALEXANDER, *Professor*; JOHN T. HOLDEN, *Associate Professor*; DONALD E. DUNN, *Assistant Professor*; CARL J. SCHNEIDER, *Instructor*.

1. (1). AMERICAN GOVERNMENT. A study of the nature and growth of the political institutions of the American people on the national, state, and local levels. The fundamentals of American government, constitutionalism, popular consent, popular control, law-making, the administration of public affairs are considered. Constant reference will be made to other systems of government and to current political development. Mr. Holden and Mr. Schneider. Open to all students. 3 lec. or rec.; 3 cr.

2. PROBLEMS OF AMERICAN GOVERNMENT. This course aims to acquaint the student with the principal problems and public policies of the American government at its various levels — national, state, and local. Particular emphasis will be given to the local and state systems in relation to the national system. Mr. Holden. Prereq.: Gov't. 1. 3 lec. or rec.; 3 cr.

4. AMERICA IN WORLD AFFAIRS. A study of the problems of American foreign relations. The formulation and execution of policy, the emergence of the United States as a world power, contemporary issues confronting the country and policies adopted to meet these issues. Mr. Schneider. Open to all students. 3 lec. or rec.; 3 cr.

7. EUROPEAN GOVERNMENTS. A comparative study of the chief governments of Europe, of their recent problems and political development. Special attention is given to the governments of Great Britain, Soviet Russia, and Germany, and to differences in the procedures and principles of the democracies, and of the totalitarian governments. Mr. Schneider. Open to Sophomores, Juniors, and Seniors. 3 lec. or rec.; 3 cr.

8. GOVERNMENTS OF THE FAR EAST. The development of the political systems of China and Japan, the role of these nations in international affairs, and a survey of contemporary problems in the Pacific and Eastern Asia. Mr. Schneider. Open to Sophomores, Juniors, and Seniors. 3 lec. or rec.; 3 cr. (Given in alternate years; offered in 1948-1949.)

10. LATIN AMERICAN GOVERNMENTS. The institutions and politics of selected Latin American governments. Relations between the United States and Latin America and problems of inter-American affairs. Mr. Schneider. Open to Sophomores, Juniors, and Seniors. 3 lec. or rec.; 3 cr. (Given in alternate years; offered in 1949-1950.)

13. LOCAL GOVERNMENT. A study of current problems in government of local areas. Subjects covered are: political and administrative consequences of urbanization, characteristics of the various types of

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local government, forms of municipal government with intensive analysis of the Council-Manager Plan, centralization and decentralization as they affect modern democracy, and selected administrative activities of the town and city. Mr. Dunn. Prereq.: Gov't. 1 and 2. 3 lec. or rec.; 3 cr.

15. **POLITICS AND PRESSURE GROUPS.** A study of the fundamental problems of popular control of government. The history, programs, and functions of political parties. Major pressure groups, their organization, methods, and objectives. Party finance, nomination procedures and elections, machines and bosses, political campaigns, problems of public control, and the current political situations. Mr. Alexander. Open to Sophomores, Juniors, and Seniors who have had Gov't. 1. 3 lec. or rec.; 3 cr.

16. **PUBLIC OPINION AND PROPAGANDA.** An analysis of public opinion and of the opinion-forming process. Propaganda techniques and methods; the measurement of public opinion; the influence of the press and of the radio. Problems in the relationship of government to public opinion. Mr. Alexander. Open to Sophomores, Juniors, Seniors who have had Gov't. 1, Psych. 1, or Soc. 1. 3 lec. or rec.; 3 cr.

51, 52. **CONSTITUTIONAL LAW.** A case study of the American Constitution, stressing the powers of Congress and the President, The Bill of Rights, limitations upon state legislation, and the nature of the judicial process. Consideration is given to the economic and social aspects of constitutional law principles. Mr. Alexander. Open to Juniors and Seniors who have had Gov't. 1, 2. 3 lec. or rec.; 3 cr.

53. **INTERNATIONAL LAW.** The rules governing the conduct of nations, states; national and international jurisdiction; specific relations of states; relations of belligerent states; rights and duties of neutrals. Mr. Alexander. Open to Juniors and Seniors. 3 lec. or rec.; 3 cr.

55. **WORLD POLITICS.** The nature of the international community and the foundations of national power. An analysis of the major forces which influence contemporary world politics, including nationalism, population and minority problems, international economics, the techniques of total war. Attention will also be given to problems of international planning and the principal issues confronting the Great Powers as a result of World War II. Mr. Schneider. Open to Juniors and Seniors. 3 lec. or rec.; 3 cr.

56. **INTERNATIONAL ORGANIZATION.** This course is designed to examine existing international organizations, both within and outside the United Nations, and to measure their effectiveness as to organization, objectives, and program. A comparison of the United Nations and its subsidiary organization with the defunct League of Nations

GOVERNMENT

and its agencies. An analysis of the policies of the major nations, *i.e.*, the United States, the U. S. S. R., and Great Britain, toward the United Nations and other international organizations. Mr. Holden. Open to Juniors and Seniors. 3 lec. or rec.; 3 cr.

57. PUBLIC ADMINISTRATION. An examination of concepts and relationships involved in getting the job done in government. Material covers the expansion and present scope of government administration; the enlarged responsibility to the public which rests upon the modern administrator; organization, coördination, and planning as tools of management; personnel, finance, and other selected administrative techniques. Mr. Dunn. Open to Juniors and Seniors who have had Gov't. 1. 3 lec. or rec.; 3 cr.

58. PROBLEMS OF PUBLIC ADMINISTRATION. An extension of the theory and techniques of Gov't. 57 as applied in the operating areas of administrative practice. Material includes an appraisal of bureaucracy and the function of administration in a democracy; the chief types of administrative organization; the administrative process: administrative procedure, management, analysis, control and responsibility. Mr. Dunn. Open to Juniors and Seniors who have had Gov't. 57. 3 lec. or rec.; 3 cr.

60. GOVERNMENT APPRENTICESHIP. This course is designed to give the student a practical concept of local government administration. Two afternoons per week will be spent working in the office of a public official in a nearby local unit of government. The student will be assigned to Bureau of Government Research service projects suited to his background and personality, in which he engages in research or analysis designed to assist the public official with whom such apprenticeship is arranged. Periodic reports will be required. Mr. Dunn. Open to Juniors and Seniors. Prereq.: Gov't. 13 or Gov't. 57 and permission of the instructor. 4 cr.

PUBLIC REGULATION OF BUSINESS. (See Economics 62, page 203.)

63. POLITICAL THOUGHT IN THE WEST. A survey of the principal political theories from Plato and Aristotle to the present day. The course is designed to show the growth and development of political thought and the importance of such thinking in terms of modern theories of government. Particular emphasis will be given to the growth of democratic liberal thought of more recent years and the challenge to such thought carried in terms of Communism, Fascism, and Nazism. Mr. Holden. Open to Juniors and Seniors. 3 lec. or rec.; 3 cr.

64. AMERICAN POLITICAL THOUGHT. A survey of American political thought from its English origins in the Colonial Period to the present. Special attention will be given to the meaning and growth of consti-

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tutionalism in American thought, as well as the other basic concepts such as Federalism, separation of powers, judicial review, centralization, states' rights, and collectivism. Recent theories and statements by responsible leaders analyzing the present-day program will be studied. Mr. Holden. Open to Juniors and Seniors. 3 lec. or rec.; 3 cr.

65, 66. RESEARCH IN GOVERNMENT PROBLEMS. An individual research project in one of the fields of government, *e.g.*: Local or State Administration, Comparative Government, International Relations, International Organization, Political Theory, Politics, or Public Law to be prepared under the direction of a member of the staff. Emphasis will be placed on the methods and sources of research in government. The department staff. Open to Senior majors in Government. 3 cr.

COURSES PRIMARILY FOR GRADUATE STUDENTS

102. THE LEGISLATIVE PROCESS. An analysis of the law-making process and the forces which shape legislation. Special consideration will be given to the influence in the legislative process of such factors as the political traditions and beliefs of the American people, public opinion, rules and procedures, committee hearings and reports, the chief executive, party organizations, pressure groups. Mr. Alexander. Prereq.: Permission of the instructor. 3 cr. (Given in alternate years; offered in 1949-1950; formerly given as Gov't. 101.)

104. THE CONSTITUTION AND CIVIL RIGHTS. The concept of civil rights as expounded by the framers of the Constitution. An analysis of United States Supreme Court decisions interpreting the Bill of Rights. Consideration is given to the social, economic, and political implications of civil liberties. Mr. Alexander. Prereq.: Permission of the instructor. 3 cr. (Given in alternate years; offered in 1948-1949. Formerly given as Gov't. 103.)

105. SEMINAR IN WORLD POLITICS. A detailed analysis of the major forces and factors influencing the development of modern world politics. Discussion of individual topics selected by students of the seminar; preparation of theses and oral reports in the field of international relations and world politics. Mr. Schneider. Prereq.: Permission of the instructor. (Formerly given as Gov't. 106.)

GREEK

(See LANGUAGES, page 241.)

HISTORY

PHILIP M. MARSTON, *Associate Professor*; WILLIAM YALE, *Associate Professor*; HOWARD P. JOHNSON, *Associate Professor*; ALLAN B. PART-
RIDGE, *Assistant Professor*; GIBSON R. JOHNSON, *Assistant Professor*.

In these courses an important place is given to historical reading

HISTORY

carried on in the reference room. Often a considerable part of the work is written.

The statements in regard to prerequisites are for Liberal Arts students. Agriculture and Technology students should consult the Head of the Department.

SURVEY COURSE

The following subject constitutes a basic course, required of all students in the College of Liberal Arts.

1, 2. INTRODUCTION TO CONTEMPORARY CIVILIZATION. Designed to provide a background of appreciation of the social significance of man's environment, the nature of man, the cultural heritage from the past, recognition of historical allusions in literature and conversation, and knowledge of the general sequence of historic events. Prehistoric and historic social evolution. The historic explanation of modern life and an appreciation of the problems of contemporary society. Messrs. H. P. Johnson, G. R. Johnson, Marston, and Yale. 3 lec. or rec.; 3 cr. *This course cannot be used to satisfy major requirements.*

GROUP I. ANCIENT AND MEDIÆVAL

This group includes many of the customary well-established courses in History. Students electing History courses with the general idea of rounding out their knowledge should include a selection from this group. History majors are expected to do a part of their work in it.

11. THE ANCIENT ORIENT. Pre-historic culture in the Near East: a consideration of the contributions of the many peoples and empires, from the Persian highlands to Egypt and the Ægean, in the making of the civilization handed on to the Mediterranean and Western world. Mr. Partridge. For Sophomores, Juniors, and Seniors. 3 lec. or rec.; 3 cr.

12. HISTORY OF GREECE. The deep-lying elements of Western civilization as developed by Greek thought and action. Hellenic culture and its influence, including adequate attention to the period after the death of Alexander the Great. Mr. Partridge. For Sophomores, Juniors, and Seniors. 3 lec. or rec.; 3 cr.

13. HISTORY OF ROME. The study of Roman civilization from the pre-literary foundations of Rome to the fourth century A.D. The aim is to deal with the life of society during the republican and imperial periods and to show the background of mediæval culture and the influence of the Roman upon later human affairs. Mr. Partridge. For Sophomores, Juniors, and Seniors. 3 lec. or rec.; 3 cr.

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14. **MEDIÆVAL HISTORY.** The story of things as they were from the later Roman Empire to the Renaissance era in Europe. A leading purpose is to call attention to the dependence of the Middle Ages upon an earlier period, and another is to point out the mediæval foundations of Modern European history. Mr. Partridge. For Sophomores, Juniors, and Seniors. 3 lec. or rec.; 3 cr.

ENGLISH HISTORY. (See History 21.)

FAR EASTERN HISTORY. (See History 31.)

GROUP II. MODERN

This group is planned in recognition of the practical importance and large place assigned by common practice to modern, recent, and present-day aspects of History.

19, 20. **MODERN EUROPEAN HISTORY.** Studies of: (1) That most important phenomenon, the modern national state; (2) Western civilization as it reached a peak in Europe; (3) European expansion and world leadership, from the late fifteenth to the early twentieth century. Eastern Europe, Asia, and Africa are referred to as backgrounds of the colonial movement. Because of its general importance, the course is open to all students; nevertheless, it is better, if possible, to study some of the earlier periods first. Mr. Yale. For Sophomores, Juniors, and Seniors. 3 lec. or rec.; 3 cr.

21, 22. **HISTORY OF ENGLAND:** The history of the British Isles from earliest times to the present, and a consideration of the British Empire and Commonwealth of Nations. A parallel to English literature, a background to American political history, and a study of English culture and institutions in the democratic and social integration of the world. Mr. Partridge. For Sophomores, Juniors, and Seniors. 3 lec. or rec.; 3 cr.

31, 32. **THE FAR EAST.** A study of the history of the peoples and cultures of Japan, China, India, and adjacent territories for the purpose of gaining a better understanding of their contemporary problems and ways of thinking and acting, especially as they relate to modern world developments. Mr. G. R. Johnson. For Sophomores, Juniors, and Seniors. 3 lec. or rec.; 3 cr.

63, 64. **RECENT WORLD HISTORY.** The world from the first World War, exclusive, for the most part, of American affairs, and stressing historical developments in Europe, the Near and Far East. Mr. Yale. For Juniors and Seniors. 3 lec. or rec.; 3 cr.

71, 72. **HISTORY OF RUSSIA.** A study of Tsarist Russia, its domestic and foreign affairs, and its collapse in 1917; followed by a study of Soviet Russia from the creation of the Soviet Union to the present. Mr. Yale. For Juniors and Seniors. 3 lec. or rec.; 3 cr.

HISTORY

GROUP III. AMERICAN HISTORY

This group addresses itself to (1) the responsibility of the American student to know his own country; (2) the widespread and well-established interest in New England's part in our history; (3) the developing Pan-American world; (4) some special aspects of American life, and American culture of the nineteenth and twentieth centuries.

7, 8. HISTORY OF THE UNITED STATES. A general survey of American history from the beginnings of the Revolution to the present time. Mr. H. P. Johnson. For Sophomores, Juniors, and Seniors. 3 lec. or rec.; 3 cr.

9, 10. LATIN-AMERICAN HISTORY. The development and influence of Spanish and Portuguese culture as a wide-spread world force; the history of the Latin-American peoples; the relationship of Latin America to North America, particularly in view of recent growth in friendly and diplomatic relations. Mr. Partridge. For Sophomores, Juniors, and Seniors. 3 lec. or rec.; 3 cr.

51, 52. COLONIAL AND REVOLUTIONARY AMERICAN HISTORY. Colonial beginnings in America, national rivalries, the English colonies, the Revolution, and our national life in 1789. Early forms of Americanism in the making. Mr. Marston. For Juniors and Seniors. 3 lec. or rec.; 3 cr. (Given in alternate years; offered in 1948-1949.)

59, 60. SOCIAL AND CULTURAL HISTORY OF NEW ENGLAND. From the settlements to the present. The material and intellectual aspects peculiar to New England's social and cultural life. The viewpoint is partly that of the antiquarian. Source materials figure considerably. It is assumed that the student is familiar with the general history of New England. Mr. Marston. For Juniors and Seniors. 3 lec. or rec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

83, 84. THE FOREIGN RELATIONS OF THE UNITED STATES. Although primarily a study in the history of American diplomacy, as much attention as possible is given to the non-diplomatic aspects of foreign relations. Mr. H. P. Johnson. For Juniors and Seniors. 3 lec. or rec.; 3 cr.

85, 86. TWENTIETH-CENTURY AMERICA. A study of the history of the United States since 1890. Emphasis is placed on economic discontent and political protest from the Populist revolt through the New Deal; and on the breakdown of isolationist policy brought about by the emergence of the United States as a world power. Mr. H. P. Johnson. For Juniors and Seniors who have completed History 7, 8 or for Seniors with the permission of the instructor. 3 lec. or rec.; 3 cr.

GROUP IV. HISTORY FROM AN EDUCATIONAL OR PHILOSOPHICAL VIEWPOINT

PHILOSOPHY OF HISTORY. (See Philosophy 55, 56, page 259.)

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87, 88. **THE INTELLECTUAL HISTORY OF WESTERN CIVILIZATION.** The history of ideas and of the great epochs in human thought. A study of the dominant characteristics of the leading cultures and of the transitions from one to the other. The content of the course will be selective rather than inclusive. Special attention will be given to a study of some of the major source writings of each period. Mr. G. R. Johnson. For Juniors and Seniors. 3 lec. or rec.; 3 cr.

HISTORY-EDUCATION (HIST-ED) 91. PROBLEMS IN THE TEACHING OF HIGH SCHOOL HISTORY. The purposes and objectives of teaching high school history; selection and organization of teaching material; teaching and testing techniques which may be advantageously used in teaching high school history and other social studies; experiments in studying and teaching history. Mr. Koch. Open to students who have satisfactorily completed Hist. 7-8, Govt. 1-2, Econ. 1 or 3, Soc. 1, and Ed. 61. 3 class meetings; 3 cr.

The Departments of Agricultural Economics, Government, History, Mathematics, and Sociology offer jointly a course designed to meet the needs of those Social Science students who are interested primarily in Statistics as applied to the Social Science fields.

COURSES PRIMARILY FOR GRADUATE STUDENTS

111, 112. **SEMINAR IN THE HISTORY OF NEW ENGLAND.** For graduate students who wish to specialize in some phase of New England history or the history of New Hampshire. The work is concerned primarily with the study and interpretation of source material and can be correlated with the preparation of a thesis. Mr. Marston. Prereq.: Permission of the instructor. 3 cr. (Not offered in 1948-1949.)

113, 114. **SOURCES FOR THE STUDY OF COLONIAL AMERICAN HISTORY.** For students who have taken History 51, 52 or the equivalent. Training in the methods of historical investigation and in the use of sources in the field of Colonial American History. The preparation of papers based on source materials alone. Mr. Marston. Prereq.: Permission of the instructor. 3 cr.

115, 116. **THE PROGRESSIVE ERA.** A study of economic discontent and political protest in the United States from the Populist revolt to the American entry into the First World War. Mr. H. P. Johnson. Prereq.: Permission of the instructor. 3 cr. (Not offered in 1948-1949.)

123, 124. **HISTORIOGRAPHY.** The lives and writing of some leading historians from earliest times to the present, and their contributions to scope, method, viewpoint, and literary achievement. Mr. Partridge. Prereq.: Permission of the instructor. 3 cr. (Not offered in 1948-1949.)

HOME ECONOMICS

HOME ECONOMICS

HELEN F. McLAUGHLIN, *Professor*; Verna Moulton, *Assistant Professor*; ALICE FOSTER, *Instructor*; MARJORIE CROSSLAND, *Instructor*; FRANCES PLATTS, *Instructor*; SARAH THAMES, *Dietitian*, University Dining Hall

1, 2. **HOMEMAKING.** The various phases of homemaking and the vocational opportunities open to women. Mrs. McLaughlin. Exploratory course; 3 lec. or rec.; 3 cr. *This course cannot be used to satisfy major requirements in Home Economics.*

Note: Further work than is offered in any of the following courses may be taken under H.Ec. 47, (47), Projects in Home Economics.

CLOTHING AND TEXTILES

3. **CLOTHING SELECTION.** The selection of suitable and becoming clothing; color; good grooming; clothing budgets; care and repair of clothing. Miss Moulton. 3 lec. or rec.; 1 lab.; 3 cr.

4. **TEXTILES.** A study of textiles with emphasis on their characteristics, utilization, care, and purchase from the point of view of the consumer. Miss Moulton. 2 lec. or rec.; 1 lab.; 3 cr.

5-6. **CLOTHING CONSTRUCTION.** Application of the principles of design and development of technique in garment construction including cotton and woolen garments, a renovation problem; pattern alteration, and children's clothes. Miss Moulton. 2 labs.; 2 cr.

61, (61). **ADVANCED PROBLEMS IN CLOTHING CONSTRUCTION.** A tailored suit or coat and one or more individual problems involving advanced techniques in the construction and renovation of clothing. Miss Moulton. Permission of instructor. 2 labs.; 2 cr.

(62), 62. **PROBLEMS IN SEWING FOR THE HOME.** Curtains, draperies, slip covers, and bedspreads. Miss Moulton. Permission of instructor. 2 labs.; 2 cr.

HISTORIC COSTUME AND DESIGN. (See Arts. 43, 44, page 184.)

FOOD AND NUTRITION

15-16. **FOODS.** The composition, selection, preservation, and preparation aspects of foods; meal planning and table service. Miss Platts. 1 lec.; 2 labs.; 3 cr.

21, 22. **ELEMENTARY MEAL SERVICE.** Planning, preparing, and serving nutritious, economical, and attractive meals. Miss Platts. For students not majoring in H.Ec. 1 lec.; 1 lab.; 2 cr.

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71. **EXPERIMENTAL COOKERY.** The application of principles and methods for organizing general and specific problems in food preparation, of an experimental nature, will be considered. Miss Platts. Prereq.: H.Ec. 15-16. 1 lec.; 1 lab.; 2 cr.

72. **ADVANCED PROBLEMS IN FOOD.** Selected problems in one or more phases of food study such as advanced food preparation, advanced meal planning and table service. Miss Platts. Prereq.: H.Ec. 15-16. 1 lec.; 1 lab.; 2 cr.

74. **DIETETICS.** Application of the principles of human nutrition to varying physiological, social, and economic conditions. Mrs. McLaughlin. 2 lec.; 1 lab.; 3 cr.

(75.) **DIET THERAPY.** Study of special diets used for the prevention and treatment of various diseases. Readings in the current literature of nutrition. Mrs. McLaughlin. Prereq.: H.Ec. 74. 3 rec.; 3 cr.

CHILD DEVELOPMENT

25-26. **CHILD DEVELOPMENT.** The normal development and care of the infant and child; physical, mental, social, and emotional development and guidance. Observation and work with children at University nursery. Prereq. or parallel requirement: Psych. 1 or 51. 2 lec. or discussions; 2 hours of laboratory work. 3 cr.

81, (82), (81), 82. **PROJECTS IN CHILD DEVELOPMENT.** Principles of child guidance. Nursery school procedures and practice. Discussion and supplementary projects based upon the special interests of the students. Prereq.: H.Ec. 25, 26. 1 lec. or discussion; laboratory with children in the play group: 2-3 cr.

HOME MANAGEMENT

32. **HOME FURNISHING.** Historical survey of furniture; problems in decorating and furnishing a modern home. Miss Moulton. 3 lec., rec. or conferences; 3 cr.

33. **HOME MANAGEMENT.** Management of time, energy, and money in relationship to home living; skills and techniques for care of the home. Miss Foster. Not open to Freshmen. Some laboratory work will be incorporated in the class periods. 3 lec. or rec.; 3 cr.

34. **CONSUMER PROBLEMS.** Problems of the consumer as related to market practices, quality and quantity standards, evaluation of advertising, and selection of goods and services for the home. Miss Foster. 3 lec. or rec.; 3 cr.

35, (35). **HOME MANAGEMENT HOUSE.** Participation in homemaking; planning, buying, and preparing meals; care of the house; efficient work habits; problems of management. Residence in the Home Management House. Miss Foster. Half semester. Permission of the Head of the Department. 3 cr.

HOME ECONOMICS

83. HOME AND FAMILY LIFE. A study of the problems confronting the home today in everyday living, such as relationships between family members, desirable home atmosphere, and worthy home membership. Mrs. McLaughlin. 3 lec. or rec.; 3 cr.

HOME BUILDING. (See Agricultural Engineering 37, page 178.)

HOUSEHOLD MECHANICS. (See Agricultural Engineering 38, page 178.)

INSTITUTIONAL MANAGEMENT

41. INSTITUTIONAL MANAGEMENT. The organization and management of institutional food and housekeeping services; personnel policies, plant sanitation, records, menu planning, production, and merchandising. Miss Thames. Prereq.: H.Ec. 49. 3 lec. or rec.; 3 cr.

43-44. INSTITUTIONAL PRACTICE. Practical experience in the kitchens and serving room of the University Commons. Miss Thames. 2 lab.; 2 cr.

45. FURNITURE AND TEXTILES. Problems in the purchase, care, and use of furniture and textiles for hotels and hospitals. Miss Moulton. 3 rec.; 3 cr.

48. FIELD WORK IN INSTITUTIONAL PRACTICE AND EXTENSION. Six to ten weeks' residence and practical experience in an approved hospital or other institution, or with extension groups, supplemented by readings and conferences. Mrs. McLaughlin and Extension staff. 4-6 cr.

49-50. QUANTITY COOKERY. A study of the quantity production and buying of food. Principles of large quantity methods and standards as applied to hotels and institutions. Laboratory work in the quantity cookery laboratory and dining hall kitchens. Miss Thames. Prereq.: H.Ec. 15-16. 1 lec.; 1-4 hr. lab.; 3 cr.

HOME ECONOMICS EDUCATION

47, (47). PROJECTS IN HOME ECONOMICS. Opportunities for students to work out projects supplementary to or in advance of other courses. Not more than 9 credits may be taken in this course. Members of Home Economics staff. Conferences and assignments; reference readings; 1-3 cr.

HOME ECONOMICS-EDUCATION (HE-Ed) 91. PROBLEMS IN THE TEACHING OF HIGH SCHOOL HOME ECONOMICS. Mrs. McLaughlin. 3 lec. or rec.; 3 cr.

HOME ECONOMICS-EDUCATION (HE-Ed) 94. SUPERVISED TEACHING IN HIGH SCHOOL HOME ECONOMICS. Mrs. McLaughlin. Twelve weeks' supervised teaching, 12 cr.

HOME ECONOMICS-EDUCATION (HE-Ed) 96. SEMINAR IN THE TEACHING OF HIGH SCHOOL HOME ECONOMICS. Mrs. McLaughlin. Prereq.: HE-Ed

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94. Three weeks' intensive work following period of supervised teaching. 3 cr.

HOME ECONOMICS-EDUCATION. (HE-Ed) 98. PRINCIPLES AND TECHNIQUES OF DEMONSTRATIONS. Fundamentals of demonstration methods. Experience in conducting demonstrations in foods, clothing, home management, equipment, and other fields. Home Economics staff. 1 conference; 1-2 lab.; 2-3 cr.

HORTICULTURE

ALBERT F. YEAGER, *Professor*; J. RAYMOND HEPLER, *Associate Professor*; L. PHELPS LATIMER, *Assistant Professor*; WILLIAM W. SMITH, *Assistant Professor*; EDWARD B. RISLEY, *Instructor*.

2. PLANT PROPAGATION. Discussion and practice including soil, sand, and peat media; seed treatments, seeding, watering, light, feeding, and temperatures; leaf, softwood and hardwood cuttings; hormone treatments; budding, root, top- and bridge-grafting; seedbed and nursery practice. Mr. Yeager, Mr. Smith. 1 lec.; 1 lab.; 2 cr.

13. JUDGING IN HORTICULTURE. Students are taught how to select fruits, vegetables, and flowers for exhibition, marketing, and domestic use. Instruction is also given in the management and judging of small fairs and exhibitions. A wide range of plants and varieties, both fresh and frozen, are used as class material. Required of all Horticulture majors and recommended for others who are training for such positions as County Agricultural Agents, Home Demonstration Agents, Club Leaders, or Smith-Hughes teachers. Mr. Yeager, Mr. Latimer, Mr. Hepler. 2 lab.; 2 cr.

14. ELEMENTARY VEGETABLE GARDENING. Garden soils; testing and planting seeds, selection of varieties with reference to New Hampshire conditions; construction and management of hotbeds and cold frames; fertilization, cultivation, and irrigation of the garden. Mr. Hepler. 2 lec.; 1 lab.; 3 cr.

28. LANDSCAPE GARDENING. The design and maintenance of small properties with emphasis on the principles of arrangement and the use and identification of plant materials in the beautification of home surroundings. 2 lec.; 1 lab.; 3 cr.

38. FLORAL ARRANGEMENT. Floral design and the use of flowers in the home; practice in floral arrangement. A laboratory fee of \$3 is charged. Prereq.: Permission of the instructor. Not open to Horticulture majors. 1 lab.; 1 cr.

39. GREENHOUSE MANAGEMENT. Modern methods of Greenhouse Management including soils, watering, costs of production and marketing, and fundamentals of plant behavior under glass. Varieties, cul-

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ture, and enemies of greenhouse plants. Practical work in propagating, potting, and other greenhouse operations. 2 lec.; 1 lab.; 3 cr. Students may elect additional work on greenhouse crops under Hort. 51 and 52.

40. FLORICULTURE, FUNDAMENTALS AND PRACTICE. The fundamentals underlying the growing of plants; culture and classification of greenhouse and outdoor plant materials; study of garden design and the use of garden flowers and deciduous plant materials in beautifying the home; practice work in propagating plants, sowing seeds, transplanting, and other garden work. Not recommended for Horticulture majors. 2 lec.; 1 lab.; 3 cr.

41. COMMERCIAL FLORAL DESIGN. The design and use of flowers in commercial flower shops including vase arrangements, baskets, corsages, sprays, and wedding decorations; principles of retail store management. For Juniors and Seniors majoring in Horticulture. 1 lec.; 1 lab.; 2 cr.

44. HORTICULTURAL PRACTICE. Seasonal practice work in fruit production, ornamentals, or vegetable production. Mr. Yeager and staff. Prereq.: Hort. 14 and 28 or 40. 1 to 5 cr.

48. BEEKEEPING. Habits of honey bees, assembling and use of hives, practice in handling bees. Production of commercial crops of comb and extracted honey, care and protection of bees during fall and winter, extraction of honey and preparation of comb honey and wax. Mr. Hepler. 1 lec.; 1 lab.; 2 cr.

51, 52. ADVANCED HORTICULTURE. Courses to be elected by students majoring in Horticulture and special students to gain further knowledge and specialization in the field of fruit, flower, vegetable production, and beekeeping. Additional laboratory practice if desirable. Mr. Yeager and staff. Prereq.: Permission to register from Head of the Department. 1 to 3 cr. per semester.

53. POMOLOGY: ORCHARD FRUITS. Fundamental principles and experimental data and their applications to orchard problems including the establishment of orchards, soil management, water and fertilizer requirements, mineral deficiencies, training and pruning, fruit bud formation, pollination and fruit setting, thinning and winter injury. Mr. Latimer. Prereq.: Bot. 1. 3 lec.; 3 cr.

54. POMOLOGY: SMALL FRUIT CULTURE. The culture and economic uses of the strawberry, raspberry, blackberry, blueberry and grape. Each fruit is considered with relation to its history, propagation, planting, pruning, harvesting, marketing, insects, and diseases, and domestic uses. Mr. Latimer. 2 lec.; 2 cr.

55. SYSTEMATIC SURVEY OF FRUITS. Important species of fruits and nuts of temperate regions and their botanical relationships. The his-

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tory, distribution, and merits of each species, and the horticultural varieties developed from it. Mr. Latimer. Prereq.: Bot. 1. 2 lec.; 2 cr.

57. **SYSTEMATIC SURVEY OF VEGETABLES.** Important species of vegetables and culinary herbs and their botanical relationships. The history, distribution, and commercial merit of each species and the horticultural varieties developed from it. Mr. Hepler. 2 lec.; 2 cr.

65. **COMMERCIAL VEGETABLE PRODUCTION.** The management of commercial vegetable gardens. Important vegetables and their culture including a comprehensive review of recent experimental work. Mr. Hepler. Prereq.: Hort. 14. 2 lec.; 1 lab.; 3 cr.

91, 92. **HORTICULTURE SEMINAR.** A review of recent Horticultural literature and methods of investigational work. Students required to prepare and present papers on selected topics. Horticultural staff. For Seniors in Hort. Others by permission of Department Head. 1 lec.; 1 cr.

94. **PLANT BREEDING.** Application of the principles of genetics to practical plant breeding. Hybridization, chemical treatments, and selection as means of producing and improving varieties. Mr. Yeager. Prereq.: Zoöl. 49. 2 lec.; 1 lab.; 3 cr.

COURSES PRIMARILY FOR GRADUATE STUDENTS

101. **FLOWER BUD FORMATION.** The influence of soil management, orchard fertilization, and resultant chemical composition of fruit plants, on flower bud formation and alternate bearing. Mr. Latimer. Prereq.: Ag. Chem. 2, Hort. 53. 2 rec.; 2 cr.

102. **METHODS OF PLANT RESEARCH.** An examination of methods used in laboratory and field by horticultural investigators. Mr. Yeager and staff. Prereq.: Ag. Chem. 2, Bot. 4, Hort. 53 or 65, Math. 5-6 or 21-22. 2 rec.; 2 cr.

103. **WINTER INJURY.** The physiology of winter injury to plants. Mr. Smith. Prereq.: Bot. 4, Hort. 53 or 65. 2 rec.; 2 cr.

104. **PROPAGATION AND GROWTH.** The problems of water relations, rest period, propagation, pruning, and thinning orchard fruits. Mr. Latimer. Prereq.: Ag. Chem. 2, Bot. 4, Hort. 53 or 65. 2 rec.; 2 cr.

106. **POLLINATION AND FRUIT SETTING.** Genetical and environmental factors affecting the production of fruit. Mr. Smith. Prereq.: Bot. 4 (may be taken concurrently), Hort. 53, Zoöl. 49. 2 rec.; 2 cr.

108. **VEGETABLE PROBLEMS.** A study of the physiological problems involved in vegetable production. Mr. Hepler. Prereq.: Bot. 4 (may be taken concurrently), Hort. 53 or 65. 2 rec.; 3 cr.

125, 126. **RESEARCH IN HORTICULTURE.** Mr. Yeager and staff. Prereq.: Hort. 102 (may be taken concurrently). Credits to be arranged.

HOTEL ADMINISTRATION

HOTEL ADMINISTRATION

RAYMOND R. STARKE, *Professor.*

The courses listed below are given primarily for students in Hotel Administration. Other students are invited to elect these courses with the permission of the instructor provided they have the prerequisites.

1. ORIENTATION. An introduction to Hotel Administration, including a history of hospitality the world over. Particular attention is paid to the origin, development, and organization of the hotel business in the United States. 2 lec.; $\frac{1}{2}$ cr. *Required of Freshmen in Hotel Administration.*

5. HOTEL OPERATION. This course deals with the problems of hotel management. Some subjects studied are the organization, personnel and work of the departments, front office procedure, rate structure, and the methods of securing and financing a hotel business. The point of view of the resort operator is constantly compared with that of the man in the year-around hotel. B.Ad. 9-10 should precede or accompany this course. 3 rec.; 3 cr.

6. HOTEL PUBLIC RELATIONS. The relations of the hotel with the public, either as prospective or present guests; sales promotion media and advertising. For Juniors and Seniors. 2 lec. or rec.; 2 cr.

HOTEL ACCOUNTING. (See B.Ad. 1-2, 9-10.)

12. FINANCIAL STATEMENTS. A study of financial reports and statements directed towards costs and percentages in hotel operations. The work is based on the Uniform System of Accounts for hotels as recommended by the American Hotel Association. Prereq.: B.Ad. 9 or H. Ad. 5. One 2 hr. rec.; 2 cr.

ELEMENTARY DRAFTING. (See Arts 20, page 182.)

FOODS. (See Home Ec. 15-16, 49-50.)

21, 22. INTRODUCTORY HOTEL ENGINEERING. To give an engineering background with additional practical information, this course supplies much of the material of an elementary Physics course with an added study of practical hotel problems, for example, commercial laundry practices and kitchen planning. Laboratory work will supplement the recitations and three or more inspection trips are made during the year. 3 lec. or rec.; 1 lab.; 4 cr.

23. STEWARDING. The management of the steward's department of a hotel, comprising the purchasing, storage, and issuing of foods, beverages, and supplies with the proper records to keep in connection therewith. This course will be given by an experienced steward. 2 lec. (One meeting on alternate weeks); 1 cr. (Not offered in 1948-1949.)

40, 42, 44, 46. LECTURES ON HOTEL MANAGEMENT. Delivered by representative and well-known men in the hotel business and allied fields. $\frac{1}{2}$ cr. for each course.

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HUMANITIES

HUMANITIES 1-2. A course in general education involving the Departments of Languages, English, Music, The Arts, and Philosophy, and designed to give an appreciation of literature, the various arts, and philosophy. The course will operate within an historical framework, but is not intended to be an historical survey. Weekly lectures or demonstrations by members of the Humanities Division, readings, study of slides, films, recordings, class recitations and discussions. Mr. Daggett. Open to Juniors and Seniors. 3 lec. or rec.; 3 cr.

INSTITUTIONAL MANAGEMENT

(See page 233.)

LANGUAGES

CLIFFORD S. PARKER, *Professor*; JOHN S. WALSH, *Associate Professor*; JULIO BERZUNZA, *Assistant Professor*; JAMES T. SCHOOLCRAFT, *Assistant Professor*; ERNEST A. BOULAY, *Instructor*; MARY C. GOTAAS, *Instructor*; FRIEDRICH W. GROB, *Instructor*.

GENERAL LANGUAGE AND LITERATURE

LANGUAGES 1, 2. SURVEY OF GREEK AND ROMAN LITERATURE. The masterpieces of Greek and Roman literature in translations. Through the study of literature, the students will learn about the ancient civilizations from which much of our contemporary culture has come. A cultural course for the general student unprepared to read the original languages but desiring acquaintance with this important subject matter. A background course for majors in such subjects as English, History, Latin, or one of the modern languages and literatures. Continued in Languages 51, 52. Mr. Walsh. 3 rec.; 3 cr.

LANGUAGES 51, 52. SURVEY OF MODERN EUROPEAN LITERATURE. The Renaissance, classicism, romanticism, and realism studied as international movements. Stress will be laid, not upon the details of each national literature, but upon the interdependence of the literatures of the various countries. Conducted in English. Prereq.: Junior, Senior, or Graduate standing. 3 rec.; 3 cr. (Not offered in 1948-1949.)

LANGUAGES 73-74. GENERAL INTRODUCTION TO THE SCIENCE OF LANGUAGE. Origins of language; languages of the world; phonology; morphology; syntax; semantics, etymology; comparative philology; dialect divergence; linguistic change; race, culture, and language; psychology of language. 3 lec.; 3 cr. (Not offered in 1948-1949.)

LANGUAGES-EDUCATION. (LANG-Ed) (91). PROBLEMS IN THE TEACHING OF MODERN LANGUAGES IN THE HIGH SCHOOL. The special objectives, methods, and devices of modern language teaching in high schools.

LANGUAGES

For prospective teachers of French, German, and Spanish. Prereq.: Education 61 with grade of C or better and one of the following courses: French 6, German 4, Spanish 4. 3 rec.; 3 cr.

FRENCH

Freshmen will be assigned to French 1, French 3, or French 5, on the basis of their performance in the French placement examination in Orientation Week.

1-2. ELEMENTARY FRENCH. Elements of French grammar, reading of simple prose, oral practice. 3 rec.; 3 cr. *Cannot be counted for major credit.*

3-4. INTERMEDIATE FRENCH. Review of most important rules of grammar; reading of a large amount of diversified French prose, partly in class, partly outside; oral practice. Principal objectives: (1) to give a solid foundation for further work in French; (2) to increase the facility and accuracy of students' reading and oral knowledge of French. Prereq.: French 2 or its equivalent. 3 rec.; 3 cr.

5-6. FRENCH CIVILIZATION AND LITERATURE. Principal objectives: (1) to study the history of French culture; (2) to increase students' ability to use and understand the French language; (3) to prepare for the study of French language and literature in more advanced courses; (4) to enable students to understand political, social, and cultural conditions in contemporary France. Prereq.: French 4. 3 rec.; 3 cr.

11-12. FRENCH LITERATURE OF THE SEVENTEENTH AND EIGHTEENTH CENTURIES. French Literature from 1600 to the French Revolution. Topics studied include: the rise and development of the classical ideal; the masterpieces of the great writers of the age of Louis XIV; the decline and disintegration of classicism in the eighteenth century; the work and influence of Voltaire and Rousseau; the writers who represent the beginnings of romanticism. Prereq.: French 6. 3 rec.; 3 cr. (Not offered in 1948-1949.)

13-14. FRENCH COMPOSITION AND CONVERSATION. The use of written and spoken French taught by careful attention to pronunciation, composition, and grammar. To provide as much oral practice as possible, the usual preparation for recitations will be partially replaced by three drill sessions per week. Prereq.: French 6. 6 rec.; 3 cr.

53. FRENCH ROMANTICISM AND REALISM. The period from 1800 to approximately 1870; Chateaubriand and Mme. de Staël; the Romantic School (Lamartine, Vigny, Victor Hugo, Dumas, Musset, etc.); the historical novel and drama; the intermingling of romanticism and realism in the work of Balzac; realism in the novel, the drama, and poetry (Flaubert, Augier, Dumas fils, Leconte de Lisle, etc.) Prereq.: French 6. 3 rec.; 3 cr.

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54. FRENCH LITERATURE FROM 1870 TO THE PRESENT. The work of Zola, Maupassant, Daudet, Bourget, Verlaine, Becque, and other outstanding writers of the last part of the nineteenth century; the various trends, schools, and individual writers of the twentieth century. Prereq.: French 53. 3 rec.; 3 cr.

61-62. ADVANCED FRENCH GRAMMAR AND COMPOSITION. A systematic study of French grammar with much oral and written practice. For students who wish to perfect their command of written and spoken French. Prereq.: French 6. (Students are advised to complete in advance French 13-14 or the equivalent.) 3 rec.; 3 cr.

63-64. FRENCH LITERATURE AND CIVILIZATION OF THE MIDDLE AGES AND THE RENAISSANCE. The various forms and masterpieces of French literature from the beginning to the year 1600. Recommended for Seniors and Graduate Students. Prereq.: French 12 or 54. 2 lec.; 2 cr. (Not offered in 1948-1949.)

92. ORAL FRENCH. Accuracy and facility in the use of oral French will be attempted through the study of phonetics and the use of dictation, conversation, phonograph, and other devices. Prereq.: French 14 or 61. 2 rec.; 2 cr. (Not offered in 1948-1949.)

COURSES PRIMARILY FOR GRADUATE STUDENTS

101, 102. HISTORY OF FRENCH LITERATURE. This course is not an introduction to French literature, but complements what the student has previously learned. In general, each student is expected to study more carefully the authors of whom he has some knowledge, to fill in the gaps between courses he has taken, and to obtain an integrated knowledge of all French literature. Prereq.: Permission of the Head of the Department. Mr. Parker. 3 cr.

103, 104. SPECIAL STUDIES IN FRENCH LITERATURE. An intensive study of one or two important authors each semester; their lives, works, and times. Molière and Alfred de Vigny, for example, might supply the material for an entire year's work. The particular authors studied, however, may be changed from year to year in accordance with the needs and tastes of the students electing the course. The work will be conducted largely in French. Prereq.: 18 credits in undergraduate courses in French literature. 3 cr.

GERMAN

1-2. ELEMENTARY GERMAN. Elements of German grammar, reading of simple prose, oral practice. 3 rec.; 3 cr. *Cannot be counted for major credit.*

3-4. INTERMEDIATE GERMAN. Designed to increase students' facility in speaking and reading German. The conversational material will comprise idiomatic and colloquial German expressions. The reading

LANGUAGES

material, which will include modern texts of varied content and progressive difficulty, will make the course of value for those who wish to use German in other academic fields, or who intend to take courses in German literature. Prereq.: German 2 or two years of high school German. 3 rec.; 3 cr.

5-6. SCIENTIFIC GERMAN. For Pre-Medical students and majors in Physics, Chemistry, Geology, Forestry, Agriculture, and Engineering. To facilitate the reading of German scientific treatises. Prereq.: German 2 or two years of high school German. 3 rec.; 3 cr.

11-12. GERMAN LITERATURE FROM 1750 THROUGH 1848. The Classical period of Lessing, Goethe, and Schiller; the Romantic period, including among others Tieck, Novalis, Kleist, and E.T.A. Hoffmann. Prereq.: German 4 or the equivalent. 3 rec.; 3 cr.

13-14. GERMAN CONVERSATION AND COMPOSITION. For students who desire a fluent practical command of spoken and written German. Class discussions conducted in German. Opportunity for informal conversation, for discussion in German of topics prepared in advance, and for free German composition. Prereq.: German 2. 3 rec.; 3 cr. (Not offered in 1948-1949.)

57-58. MODERN GERMAN LITERATURE. The works of Grillparzer, Hebbel, Ludwig, Keller, Meyer, Hauptmann, Sudermann, as well as those of other authors whose activity extends to the present time. Prereq.: Two years of college German or the equivalent. 3 rec.; 3 cr. (Not offered in 1948-1949.)

63-64. HISTORY OF GERMAN CULTURE. Its development from pagan to modern times. Representative works read in and out of class. The history of German civilization is taken up parallel with the history of literature. Prereq.: Two years of College German or the equivalent. 3 rec.; 3 cr. (Not offered in 1948-1949.)

GREEK

1-2. ELEMENTARY GREEK. Grammar, composition, translation. Prereq.: Permission of the instructor. 3 rec.; 3 cr. (Offered in 1948-1949.)

3-4. Translation of several books of Homer's *Iliad*; work in grammar and word-derivations. Prereq.: Greek 2. 3 rec.; 3 cr. (Given every third year; not offered in 1948-1949.)

LATIN

1-2. ELEMENTARY LATIN. Elements of grammar, reading of simple prose. Study of the changes in meaning and form of English and Romance language derivatives from Latin. 3 rec.; 3 cr. (Not offered in 1948-1949.) *This course cannot be used to satisfy major requirements.*

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3-4. **INTERMEDIATE LATIN.** A review of Latin grammar and vocabulary, followed by readings in poetry and prose. Prereq.: Latin 2 or two years of high school Latin. 3 rec.; 3 cr.

5-6. **LATIN POETRY.** Selected poems from Catullus, Ovid, Phaedrus, Martial, and the odes and epodes of Horace. Translations, lectures, and study of Latin influence on English poetry. Prereq.: Latin 4, or three years of high school Latin. 3 rec.; 3 cr. (Not offered in 1948-1949.)

7-8. **LATIN PROSE AND COMEDY.** The plays of Plautus and Terence, Livy's History (Books I and II), and Pliny's Letters, studied for their value as mirrors of the life and history of Rome as well as for their literary value. Prereq.: Latin 4. 3 rec.; 3 cr. (Not offered in 1948-1949.)

9-10. **MASTERPIECES OF LATIN LITERATURE.** Intensive study of selections from such prose writers as Plautus, Livy, Pliny, Caesar, and Cicero, and of such poets as Catullus, Horace, and Virgil. Rapid reading of other works by the same and additional authors. Lectures on Roman civilization and its contributions to the general culture of the world. 3 rec.; 3 cr. (Not offered in 1948-1949.)

51-52. **PHILOSOPHY AND SATIRE.** Philosophy, religion, natural science, and social theories of the Romans, as exemplified in the writings of Horace, Martial, and Cicero. Prereq.: Latin 6. 3 rec.; 3 cr. (Not offered in 1948-1949.)

55-56. **LITERATURE AND HISTORY.** A comprehensive view of Latin literature of the Golden Age, particularly the works of Caesar, Cicero, and Virgil. Literary value and historical content will be studied as well as such background of the history of Rome during the period as is necessary for the student or teacher of the classics. Prereq.: Latin 6. 3 rec.; 3 cr. (Not offered in 1948-1949.)

LATIN-EDUCATION. (LAT-ED) 91-92. **PROBLEMS IN THE TEACHING OF HIGH SCHOOL LATIN.** The study of methods, objectives, and problems of teaching high school Latin will be carried on throughout the year concurrently with work in composition and conversation. Prereq.: Latin 6. 3 rec.; 3 cr. (Not offered in 1948-1949.)

COURSES PRIMARILY FOR GRADUATE STUDENTS

125, 126. **LATIN LITERATURE.** A study of Latin literature through the medium of selections from the works of the more important authors from the beginnings to the decline of literary Latin. This reading will be supplemented by a detailed study of some special field, author, or group of authors. Mr. Walsh. 3 rec.; 3 cr.

LANGUAGES

SPANISH

1-2. **ELEMENTARY SPANISH.** Elements of Spanish grammar, reading of simple prose, oral practice, dictation. 3 rec.; 3 cr. *This course cannot be used to satisfy major requirements.*

3-4. **MODERN SPANISH PROSE AND POETRY.** Review of grammar, reading, composition, and conversation. A large part of the reading will be in the field of Latin-American literature and civilization. Prereq.: Spanish 2 or its equivalent. Freshmen who pass a reading test in Spanish may take this course. 3 rec.; 3 cr.

9. **THE DRAMA OF THE SIGLO DEORO IN SPAIN.** Representative plays or Lope de Vega, Tirso de Molina, Guillen de Castro, Calderón, and other dramatists of the Golden Age of Spanish Literature. Prereq.: Spanish 4. 3 rec.; 3 cr. (Not offered in 1948-1949.)

10. **THE PICARESQUE NOVEL AND THE WORKS OF CERVANTES.** *Celestina*, *Lazarillo de Tormes*, *Don Quijote*, and other novels of the sixteenth and seventeenth centuries. Lectures on Spanish civilization. Prereq.: Spanish 4. 3 rec.; 3 cr. (Not offered in 1948-1949.)

13-14. **SPANISH COMPOSITION AND CONVERSATION.** The use of written and spoken Spanish taught by careful attention to pronunciation, grammar, and composition. To provide as much oral practice as possible, the usual preparation for recitations will be partially replaced by three drill sessions each week. Prereq.: Spanish 4. 6 rec.; 3 cr.

55-56. **LATIN-AMERICAN LITERATURE.** Selected writers of Latin-American countries who illustrate literature and social conditions in Central and South America. Certain works will be discussed in class while others will be assigned for collateral reading. Prereq.: Spanish 4. 3 rec.; 3 cr.

COURSES PRIMARILY FOR GRADUATE STUDENTS

101, 102. **SPANISH LITERATURE OF THE MIDDLE AGES.** Masterpieces and writers of Spanish literature from the beginnings to 1500. Their historical background. Conducted as far as possible in Spanish. Prereq.: 3 years of college Spanish or equivalent. 3 lec.; 3 cr. Mr. Berzunza.

LATIN

(See LANGUAGES, page 241.)

LAW

(See PRE-LAW, page 120.)

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MATHEMATICS

HERMON L. SLOBIN, *Professor*; GEORGE N. BAUER, *Professor Emeritus*; MARVIN R. SÖLT, *Associate Professor*; HORACE A. GIDDINGS, *Associate Professor*; WILLIAM L. KICHLINE, *Assistant Professor*; DONALD M. PERKINS, *Assistant Professor*; JOHN S. FRENCH, *Assistant Professor*; RICHARD H. SOMERS, *Assistant Professor*; A. RAYMOND HARVEY, *Assistant Professor*; JOHN S. STUBBE, *Assistant Professor*; ROBERT O. KIMBALL, *Instructor*; CHARLES A. SEWELL, *Instructor*.

2, (2). ALGEBRA. The elements of algebra. This course is intended primarily for students with only one entrance unit of algebra. Prereq.: One entrance unit of algebra. 3 rec.; 3 cr. Does not count for major credit in Mathematics.

7-8. CALCULUS. Applications of differentiation and integration; special methods of integration; the definite integral; applications of the definite integral to geometry, physics, and mechanics; introduction to sequences and series. Prereq.: Math. 4 or 6. 3 rec.; 3 cr. (Not offered after 1948-1949.)

9. SOLID GEOMETRY. The elements of solid geometry. Prereq.: High-School algebra and plane geometry. 2 rec.; 2 cr. Does not count for major credit in Mathematics.

11, (11). ALGEBRA. The elements of algebra. Prereq.: 3 entrance units of mathematics. 3 rec.; 3 cr. Does not count for major credit in Mathematics.

13, (13). TRIGONOMETRY. The elements of trigonometry, logarithms, complex numbers. Prereq.: Two entrance units of algebra or Math. 2.; 3 rec.; 3 cr. Does not count for major credit in Mathematics.

14, (14). ANALYTIC GEOMETRY. The elements of analytic geometry. Prereq.: Math. 13 and Math. 11 or 2. 3 rec.; 3 cr.

16, (16). CALCULUS I. An introduction to the differential and integral calculus. Prereq.: Math. 14 (may be taken simultaneously). 3 rec.; 3 cr.

17. CALCULUS II. Differential and integral calculus. Prereq.: Math. 16. 3 rec.; 3 cr. (Offered after 1948-1949.)

18. CALCULUS III. Selected topics of advanced calculus, series, introduction to differential equations. Prereq.: Math. 17. 3 rec.; 3 cr. (Offered after 1948-1949.)

30. ASTRONOMY. A brief descriptive course. A study of the physical characteristics and motions of the members of the solar system and the sidereal universe. Illustrated lectures, recitations, and practice in the use of equatorial telescope. Mr. Solt. Prereq.: One year college physical science. 3 rec.; 3 cr.

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34. MATHEMATICS OF FINANCE. Simple and compound interest, discount, annuities, depreciation, evaluation of securities, building and loan associations, and elements of life insurance. Mr. Kichline. Prereq.: Math. 2 or 11. 3 rec.; 3 cr.

41-42. INTRODUCTION TO STATISTICAL METHODS. The meaning and interpretative use of the most commonly used statistical symbols and terminology. Applications to various problems. (Math. 43-44 should be taken by all qualified students; it is a prerequisite for other courses in Statistics.) Prereq.: One year of college mathematics or its equivalent. 3 rec.; 3 cr. Does not count for major credit in Mathematics.

43-44. INTRODUCTION TO MATHEMATICAL STATISTICS. Frequency distribution, averages, measures of dispersion, measures of skewness, normal probability curve, correlation, sampling, tests of significance. Prereq.: Math. 17. 3 rec.; 3 cr. No credit for students having credit in Math. 41-42.

51-52. DIFFERENTIAL EQUATIONS. Ordinary and partial differential equations, Fourier series, and applications. Prereq.: Math. 18. 3 rec.; 3 cr.

54. VECTOR ANALYSIS. Vector and scalar algebra and geometry, differentiation and differential operators, applications to electrical theory and to mechanics, dynamics, and hydro-dynamics. Prereq.: Math. 18. 3 rec.; 3 cr.

55-56. ADVANCED PLANE AND SOLID ANALYTIC GEOMETRY. Prereq.: Math. 18. 3 rec.; 3 cr.

57. HISTORY OF MATHEMATICS. An historical background and an appreciation of the development of various fields of Mathematics. Designed especially for those preparing to teach Mathematics in high school. Mr. Sewell. Prereq.: Math. 17. 3 rec.; 3 cr.

63-64. STATISTICAL METHODS. A continuation of Math. 43-44 including a more thorough study of correlation, sampling, tests of significance. Prereq.: Math. 44. 3 rec.; 3 cr.

71-72. ADVANCED ALGEBRA. Matrix theory, including elementary divisors and invariant factors; linear transformations; quadratic bilinear and Hermitian forms; invariants and covariants with geometric applications; and topics from the theory of equations, including symmetric functions and groups of substitutions. Prereq.: Math. 18. 3 rec.; 3 cr.

91. MATHEMATICS-EDUCATION (MATH-Ed). The aims and values of secondary-school mathematics; the recommendations of the national committee on mathematics requirements, and the State Board requirements; the subject matter and the sequence in which it should be presented in both junior and senior high schools; techniques and instructional aids used in teaching secondary-school mathematics;

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errors, testing program, remedial teaching. Students preparing to teach mathematics in high school should register for this course, it is a prerequisite for Supervised Teaching in Mathematics. Lectures, assigned readings, and discussions. Mr. Perkins. Prereq.: Ed. 61 and Math. 16. 3 rec.; 3 cr. \

COURSES PRIMARILY FOR GRADUATE STUDENTS

101-102. COMPLEX VARIABLE. The theory of analytic functions of a single complex variable by the methods of Cauchy (integrals), Riemann (derivatives) and Weierstrass (series); conformal mapping and Riemann surfaces; and the elementary theory of elliptic functions. Mr. Harvey. Prereq.: Math. 51. 3 rec.; 3 cr.

103-104. REAL VARIABLE. The real number system, the theory of point sets, Lebesgue integration, the Riesz-Fischer theorem, functions of bounded variation, and other selected topics. Prereq.: Math. 51. 3 rec.; 3 cr.

105-106. DIFFERENTIAL GEOMETRY. Plane and space curves, first and second differential forms of a surface, theorems of Meusnier and Euler, lines of curvature, asymptotic lines, conjugate lines, geodesics, theorems of Gauss and Codazzi, developable surfaces, Liouville surfaces, problems of mapping. Mr. Giddings. Prereq.: Math. 18. 3 rec.; 3 cr.

107-108. INFINITE SERIES AND PRODUCTS. This course includes selections from the following topics: theories of irrationals; series of positive terms; convergence tests; general series; double series; transformation of series; and divergent series. Mr. Slobin. Prereq.: Math. 51. 3 rec.; 3 cr.

109-110. ANALYTICAL MECHANICS. Statics and dynamics of particles and rigid bodies, Lagrange's equations. Mr. Solt. Prereq.: Math. 51. 3 rec.; 3 cr.

113-114. ADVANCED STATISTICS. This course centers about the problem of sampling and includes such topics as the normal distribution and the problem of inference, the chi-square test, the t-test, and a study of variance and covariance. Numerous applications are introduced. A general review of the more important statistical methods is included. Mr. Kichline. Prereq.: Math. 63-64. Hours and credits to be arranged.

MECHANICAL ENGINEERING

EDWARD L. GETCHELL, *Professor*; LAUREN E. SEELEY, *Professor*; E. HOWARD STOLWORTHY, *Associate Professor*; EDWARD T. DONOVAN, *Associate Professor*; LYMAN J. BATCHELDER, *Instructor, Emeritus*; JOHN

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C. TONKIN, *Instructor*; ELIA O'CONNELL, *Instructor*; TENHO S. KAUPPINEN, *Instructor*; WILLIAM E. CLARK, *Instructor*; WILLIAM D. CLEMENT, *Instructor*; EDWIN I. KIMBALL, *Instructor*; GARDNER LADD, *Instructor*; AUSTIN H. WELCH, *Instructor*; EUGENE L. FOSTER, *Instructor*.

1-2. **ENGINEERING DRAWING.** Fundamentals, including freehand lettering, use of instruments, isometric drawing, and the solution of problems by the principles of descriptive geometry. Messrs. Kauppinen, Clement, and Ladd. 2 lab.; 2 cr.

3. **MACHINE DRAWING.** Application of the principles of engineering drawing to machine parts. Various pictorial systems as an aid in sketching. Reproduction methods and modern drafting room organizations. Commercial drafting room methods in sketching machine parts, drawing from sketches, and making tracings. Mr. Kauppinen. Prereq.: M.E. 1. 2 lab.; 2 cr.

4. **KINEMATICS.** Motion in machine construction; belts and other flexible connectors; gear and gear teeth; wheels in trains; epicyclic trains; cams; instantaneous centers; linkwork, velocity, and acceleration diagrams. Prereq.: M.E. 1, M.E. 2 and Math. 7. 1 rec.; 2 lab.; 3 cr. Mr. Kauppinen.

5-6. **MECHANICAL LABORATORY.** An over-all view of the more elementary features of Mechanical Engineering. Introduction of the equipment in the mechanical laboratory and the University Power Plant, and instruction in its use for studying problems found in Mechanical Engineering practice. Mr. Ladd. M.E. 5. 1 lab.; 1 cr.; M.E. 6. 1 lab.; 2 cr.

7-8. **MECHANICS.** A study of forces and moment of forces; determination of stresses in trusses and cranes; centroids and center of gravity; rectilinear and curvilinear motion; translation and rotation of bodies; work, power, and energy. The application of mechanics to the determination of stress and strain in rigid bodies. The study of thin walled cylinders; riveted joints; torsion; transverse loading of beams; deflection in beams of all kinds; study of columns; compound stresses as applied to design of machine parts. Work in the second semester to be paralleled by exercises in the materials laboratory. For Juniors in Mechanical Engineering. Mr. Getchell. Prereq.: Math. 8 and Phys. 7. M.E. 7. 4 rec.; 4 cr. M.E. 8. 3 rec.; 1 lab.; 4 cr.

9-10. **MECHANICS.** Similar to Mechanical Engineering 7-8, but with those portions having application to the design of machine parts omitted. For Junior civil and electrical engineers. Mr. Kauppinen. Prereq.: Math. 8 and Phys. 7. M.E. 9. 3 rec.; 3 cr. M.E. 10. 3 rec.; 1 lab.; 4 cr.

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13. **ELEMENTARY METALLURGY.** A study of ferrous and non-ferrous metals and alloys used in engineering; a survey of the field of metals with particular attention to structure and properties resulting from alloying and heat treatments. Mr. Getchell. Prereq.: Chem. 4. 2 rec.; 2 cr.

15-16. **MACHINE DESIGN.** Application of the principles of mechanics to the design of machine elements with the idea of manufacturing the parts in the most economical manner in the shops. General principles of design will be followed rather than the development of any particular system of procedure. Mr. Getchell. Prereq.: M.E. 8. 1 rec.; 2 lab.; 3 cr.

17. **HEAT TREATMENT LABORATORY.** The study of the heat treatment of steel to obtain the proper strength, hardness, and ductility. Methods of determining the carbon content. Mr. Getchell. Prereq.: M.E. 13. 1 lab.; 1 cr.

21. **HEAT POWER ENGINEERING.** The fundamental theory of engineering thermodynamics and its applications to steam power plant and internal combustion equipment. For civil engineers. Mr. Welch. Prereq.: Math. 7 and Phys. 8. 3 rec.; 3 cr.

23-24. **THERMODYNAMICS.** The fundamental laws of thermodynamics and their relation to the operation of mechanisms using gases and vapors as their working substances. For mechanical engineers. Mr. Donovan. Prereq.: Math. 7 and Phys. 7. 3 rec.; 3 cr.

25-26. **HEAT POWER ENGINEERING.** The laws of thermodynamics and a consideration of steam power plant and internal combustion engine equipment. For electrical engineers. Mr. Stolworthy. Prereq.: Math. 7 and Phys. 7. 25:3 rec.; 3 cr. 26:3 rec.; 1 lab.; 4 cr.

27. **MECHANICAL LABORATORY.** The apparatus and methods of testing power plant operation and equipment. Mr. Donovan. Parallel requirement: Enrollment in M.E. 25-26. 2 lab.; 2 cr.

29-30. **MECHANICAL LABORATORY.** Methods of investigating operation and testing of power plant equipment. Mr. Donovan. Parallel requirement: Enrollment in M.E. 23. 29:2 lab.; 2 cr. 30:1 lab.; 1 cr.

39. **HEATING AND AIR CONDITIONING.** Heat losses and ventilation requirements of buildings, and the design of specific heating and ventilating systems. Mr. Stolworthy. Prereq.: M.E. 24. 2 lab.; 2 cr.

40. **HEATING AND AIR CONDITIONING.** Present methods of heating and ventilating buildings. Mr. Stolworthy. Prereq.: Hotel Admin. 21, 22, or Phys. 2. 1 rec.; 1 lab.; 2 cr.

52. **MECHANICAL LABORATORY.** Performance studies of steam engines and turbines, nozzles, and condensers. Application of the laws of thermodynamics to steam power plant equipment. Mr. Donovan. Prereq.: M.E. 30. 2 lab.; 2 cr.

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53-54. POWER PLANTS. A study of the steam generating power plant dealing with its equipment and costs. For mechanical engineers. Mr. Donovan. Prereq.: M.E. 24. M.E. 53: 2 rec.; 2 cr. M.E. 54: 1 rec.; 2 lab.; 3 cr.

55-56. INTERNAL COMBUSTION ENGINES. Thermodynamics applied to spark ignition and compression ignition engines and gas turbines. Fuels, carburetion, fuel injection, combustion chambers, lubrication, cooling, and performance. Mr. Stolworthy. Prereq.: M.E. 8 and 24. 2 rec.; 1 lab.; 3 cr.

59, 60, 61, 62. STUDENT BRANCH OF AMERICAN SOCIETY OF MECHANICAL ENGINEERS. An organization of Junior and Senior students. Preparation and presentation of addresses on Mechanical Engineering topics by members, and criticism by instructor of delivery, subject matter and terms used. Required by Juniors and Seniors in M.E. No credit.

65. ENGINEERING ECONOMY. The principles which form the basis of engineering procedures for obtaining the highest ratio of utility to cost. Prereq.: Senior standing. 3 rec.; 3 cr.

66. INDUSTRIAL MANAGEMENT. Principles and methods of industrial management, designed to give students a working knowledge of modern industrial practice, with particular emphasis on the engineering viewpoint. Prereq.: Senior standing. 3 rec.; 3 cr.

COURSES PRIMARILY FOR GRADUATE STUDENTS

101, 102. ADVANCED THERMODYNAMICS. The general equations of thermodynamics and their application to fluids such as air and steam; heat transmission; current applications and advances in thermodynamics. Mr. Donovan. 3 rec.; 3 cr.

105, 106. ADVANCED MECHANICS OF MATERIALS. To review and show the limitations of the ordinary formulas of strength of materials. To consider the conditions under which these limitations hold and to extend the subject to more complex topics than those previously considered. To present a more detailed study of the concepts and methods used in analysis of stresses in structures and machine members. Further study of stresses in plates, thick cylinders, rotating cylinders, and shafts; stresses in curved members under flexure; stress concentrations and analysis of stresses in statically indeterminate structures by elastic strain energy and photoelastic methods. Mr. Getchell. Prereq.: M.E. 8. 3 rec.; 3 cr.

MECHANICAL ENGINEERING SHOP COURSES

S1, S2. ELEMENTARY SHOP PRACTICE. For shop work Freshmen in Technology are divided into two groups, meeting simultaneously in Forge Shop and Machine Shop. Machine shop: practice in the operation of engine lathes and other machine tools, where precise measure-

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ments are important; the machinability of metals in the preparation of test specimens for use in the course on strength of materials. Forge shop: the operations necessary in the forging and welding of iron and steel, in the hardening, tempering, and annealing of steel. (S1 is Forge Shop; S2 is Machine Shop.) Messrs. O'Connell and Tonkin. 2 lab.; 2 cr.

S13, (S13). FORGE SHOP. Advanced work in forging, electric, and acetylene welding, tempering, case hardening, tool dressing. Mr. O'Connell. Prereq.: M.E. S1. 2 lab.; 2 cr.

S17, (S17). MACHINE SHOP. Continuation of work given in S2. Mr. Tonkin. Prereq.: M.E. S2. 2 lab.; 2 cr.

MEDICINE

(See PRE-MEDICINE, page 124.)

METEOROLOGY

(See page 222.)

MILITARY SCIENCE & TACTICS

COL. JAMES C. BATES, CAC, *Professor*; LT. COL. HUNTINGTON K. GILBERT, USAF, *Associate Professor*; MAJOR DAVID C. BEALL, FA, *Assistant Professor*; MAJOR JAMES A. SULLIVAN, CAC, *Assistant Professor*; MAJOR JOHN H. VEYETTE, JR., USAF, *Assistant Professor*; CAPT. LEO D. LEAVENGOOD, CAV, *Assistant Professor*; CAPT. NAPOLEON A. SHAKA, USAF, *Assistant Professor*; M/SGT. CLARENCE B. DAYTON, AF, *Assistant*; M/SGT. WESLEY W. GIFFORD, AF, *Assistant*; 1ST/SGT. PAUL R. HOUCK, CAC, *Assistant*; T/SGT. CARLE F. HUSTON, CAC, *Assistant*; 1ST/SGT. RICHARD J. MONIHAN, CAC, *Assistant*; 1ST/SGT. JOSEPH L. MROZ, AF, *Assistant*; M/SGT. JOHN J. STEMPKOWSKI, Inf., *Assistant*; M/SGT. EDGAR S. SEAVEY, CAV, *Assistant*; T/SGT. PHILIP J. WHELAN, Inf., *Assistant*; 1ST/SGT. ROBERT KYLE, FA, *Assistant*.

BASIC COURSE

1-2. FIRST YEAR (BASIC). Individual Weapons and Marksmanship; Hygiene and First Aid; Leadership Drill and Exercise of Command; Map and Aerial Photograph Reading; Military Organization; National Defense Act and ROTC. Required of Freshmen: Minimum of 3 hours of formal instruction. 3 cr.

3-4. SECOND YEAR (BASIC). Evolution of Warfare; Leadership Drill and Exercise of Command; Map and Aerial Photograph Reading; Military Administration; Military Law; Physical Development Methods. Required of Sophomores: Minimum of 3 hours of formal instruction. 3 cr.

MILITARY SCIENCE

ADVANCED COURSE

FIRST YEAR ADVANCED — GENERAL. Leadership Drill and Exercise of Command; Military Law; Military Leadership; Geographical Foundation of National Power and Specialized Training*. Elective Course. Minimum of 5 hours of formal instruction. 6 cr.

5-6 A. FIRST YEAR ADVANCED — U. S. AIR FORCES.* Instruction in the various administrative, tactical, and technical aspects of the U. S. Air Forces, including Supply, Transportation, Aeronautics, Navigation, History, Statistical Control, Organization, Meteorology, Intelligence, Air Operations, Training, Inspections, Communications and Guided Missiles.

5-6 C. FIRST YEAR ADVANCED — ARTILLERY.* Basic gunnery, organization, transportation, communications, and the characteristics and Tactical Employment of all Artillery Weapons.

5-6 I. FIRST YEAR ADVANCED — INFANTRY.* Gunnery, Technique of Fire, Fire Control and Tactical Employment of Infantry Weapons in the Military Team.

SECOND YEAR ADVANCED — GENERAL. MILITARY PROBLEMS IN THE UNITED STATES. Command and Staff; Military Teaching Methods; Military Mobilization; Psychological Warfare; Leadership Drill and Exercise of Command, and Specialized Training*. Minimum of 5 hours of formal instruction. 6 cr.

7-8 A. SECOND YEAR ADVANCED — U. S. AIR FORCES.* Instruction in a specialized course designed to qualify the student for a definite duty assignment, such as Engineering Officer; Personnel Administration Officer, etc.

7-8 C. SECOND YEAR ADVANCED — ARTILLERY.* Advanced Artillery Tactics and Gunnery, New Developments in Artillery Weapons (to include Guided Missiles) and in their employment, logistics, and supply.

7-8 I. SECOND YEAR ADVANCED — INFANTRY.* Advanced Infantry Gunnery; Tactics and Technique to include New Developments; Logistics and Supply.

MUSIC

KARL H. BRATTON, *Associate Professor*; ROBERT W. MANTON, *Professor*; IRVING D. BARTLEY, *Assistant Professor*; MARGARET O. BLICKLE, *Instructor*; GEORGE E. REYNOLDS, *Instructor*; ELAINE R. MAJCHRAK, *Instructor*; DONALD E. STEELE, *Instructor*; JOHN MITCHELL, *Instructor*; PAUL GILES, *Instructor*.

*Denotes Specialized Training.

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Registration for musical organization courses should be completed during the registration period. These courses cannot be used to satisfy major requirements. Registration in musical organizations must be approved by the Chairman of the Department of Music.

1, (1). UNIVERSITY BAND. Open to all undergraduates on basis of individual tryouts. The University Band furnishes music for the R.O.T.C. drills, all athletic events at home, and also gives concerts during the college year. Course credit is based on the extent and quality of participation. A student who participates in both marching and concert band activities receives full credit; those who limit their activities to either marching or concert band receive half credit. Prereq.: Permission of the instructor. 2 rec.; $\frac{1}{2}$ -1 cr.

3W, (3W). WOMEN'S GLEE CLUB. Open to all students interested in singing who fulfill the requirements of a tryout. Recommended for all women voice majors. Miss Majchrzak. Prereq.: Permission of the instructor. 2 rec.; $\frac{1}{2}$ cr.

3M, (3M). MEN'S GLEE CLUB. Open to all students interested in singing who fulfill the requirements of a tryout. Recommended for all men voice majors. Mr. Bratton. Prereq.: Permission of the instructor. 2 rec.; $\frac{1}{2}$ cr.

5, (5). UNIVERSITY CHOIR. An advanced choral group devoted to the study and performance of the best classical and modern choral literature. Recommended for men and women voice majors. Mr. Bratton. Prereq.: Permission of instructor. 2 rec.; $\frac{1}{2}$ cr.

7, (7). ENSEMBLE. Small groups of instrumentalists and vocalists organized to provide advanced students experience in such groups as the Madrigal Singers, string quartets, men's quartets, and women's sextets. Mr. Giles. Prereq.: Permission of the instructor. 2 rec.; $\frac{1}{2}$ cr.

8, (8). STRING ORCHESTRA. Open to all students on the basis of individual tryouts. This group appears at all the University Symphony Orchestra concerts. Mrs. Blickle. 1 rec.; $\frac{1}{2}$ cr.

9, (9). UNIVERSITY ORCHESTRA. Open to all students on basis of individual tryouts. The Orchestra gives several concerts during the year and also accompanies the vocal groups and solo instrumentalists on various occasions. Mr. Reynolds. Prereq.: Permission of instructor. 2 rec.; $\frac{1}{2}$ cr.

Only a possible total of 4 credits may be earned in four years by students in musical organizations to be counted towards graduation. An exception to this will be members of the R.O.T.C. Band and Music majors. Music majors may earn not more than 8 credits in musical organizations.

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APPLIED MUSIC

All candidates for a degree with a major in Music (Applied Music option) must take an entrance examination before the Staff of the Department of Music to be judged as to their competence to become Music majors. The examination may be taken any time before the beginning of their Sophomore Year.

Lessons in Applied Music are based on $\frac{1}{2}$ -hour private instruction. One semester hour of credit will be given for one lesson; two semester hours of credit will be given for two lessons. Five one-hour practice periods will be allotted to each student. Necessary supplementary practice periods must be sought out by the music students themselves. The special semester fee for Applied Music is \$25 for one lesson a week, and \$50 for two lessons a week. These fees include the use of a practice room for the required preparation. Organ students will pay \$30 for one lesson a week and \$60 for two lessons a week.

Majors in Applied Music are required to present seven semester hours in the applied music taken over a period of six semesters. Two lessons per week are required in the last semester of the Senior Year. Two semester credits taken in the Freshman Year are regarded as prerequisite to entrance into the Music major field.

Registration in Applied Music is subject to approval by the Head of the Music Department. A student may register for the same course in successive semesters.

23, (23). PIANO. The methods of presentation and the material used vary with the particular needs of each individual pupil. For some students it will be necessary to intensify the technical side of playing, since an inadequate technique obviously is a handicap to a successful expression of musical thought. A number of pieces from the best masters will be studied for the purpose of applying principles of technique as well as gaining for the student an insight into the possibilities of musical expression. Mr. Bartley, Mr. Steele, Mr. Mitchell. 1 or 2 lessons; 1-2 cr.

24, (24). ORGAN. Students must possess reasonable keyboard facility before attempting the study of organ and should secure the permission of the organ instructor before enrolling for the course. The material used in the organ course includes Graded Materials for the Organ by Rogers, preludes and fugues by Bach, sonatas by Mendelssohn as well as compositions by contemporary American composers. Since the aim of the course is primarily to prepare students for playing in church services, emphasis will be laid on hymn playing and also on providing suitable organ accompaniments for solo, quartette and chorus. During the Junior and Senior Years the larger compositions by Franck, Widor and Guilmant will be studied. Mr. Bartley. 1 or 2 lessons, 1-2 cr.

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25, (25). VIOLIN. Lessons in violin playing are adjusted to the individual needs of the pupil. A sound technical foundation is imparted with special stress, on clear, resonant tone production, accurate intonation, fluency, and velocity. Technical exercises, studies, and solos are selected to correct the pupil's deficiencies and to develop and promote his talents and artistic self-expression. Solos are selected from the best violin literature and are studied as concert pieces and also as applications of the numerous items of basic technique. Mrs. Blickle. 1 or 2 lessons; 1-2 cr.

26, (26). VOICE. Instruction in voice will seek to develop those qualities which are essential for intelligent interpretation, such as correct posture, breathing, pure tone, resonance, clear enunciation, and technical facility. Each voice is given the treatment best suited to its individual needs. A higher ideal than the perfection of mere mechanical skill is sought, namely a musicianly style of singing and a thorough appreciation of the best works of the masters, both classic and modern. Mr. Bratton and Miss Majchrzak. 1 or 2 lessons; 1-2 cr.

27, (27). VIOLONCELLO, VIOLA, STRINGBASS. The course consists of instruction in tuning, bowing, and in positions, as well as a thorough grounding in technical studies, solos, and ensemble literature. Mrs. Blickle. 1 or 2 lessons; 1-2 cr.

28, (28). WOODWIND. Courses in the technique and literature of clarinet, flute, oboe, bassoon; and saxophone or any woodwind instrument are given. Mr. Giles. 1 or 2 lessons. 1-2 cr.

29, (29). BRASS. Instruction will be offered for any of the following instruments: trumpet, trombone, French horn, baritone, and tuba, or any brass instrument. Correct tone production, articulation, and musical interpretation are stressed. Mr. Reynolds. 1 or 2 lessons; 1-2 cr.

30, (30). PERCUSSION. Mr. Giles. 1 or 2 lessons; 1-2 cr.

THEORY AND COMPOSITION

11-12. HARMONY. The fundamental principles of the theory of music are embodied in the study of harmony. It treats of the different chords in their natural and combined relationships. The subdivisions are as follows: intervals, triads, inversions of the same, the entire seventh chord family and its inversions together with intensive drill in sight singing, ear training, and melodic-harmonic dictation, and keyboard harmony. Recommended for students who wish to prepare themselves for intelligent listening to music and for participation in music activities such as glee clubs, etc. *This course cannot be used to satisfy major requirements.* Mr. Manton. 5 rec.; 4 cr.

15-16. ADVANCED HARMONY AND COUNTERPOINT. Designed to supplement the technical training begun in Music 11-12. Simple counterpoint in two parts will be studied *parallel* to the acquisition of such

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new harmonic materials as ninth chords, cadences, chromatically altered chords, suspensions, augmented chords, ornamental tones, pedal point and modulation. Further harmonic dictation together with contrapuntal dictation and keyboard harmony. Contrapuntal studies will include three-part writing as its final objective. Mr. Manton. Prereq.: Music 11-12 or equivalent. 5 rec.; 4 cr.

41-42. PRINCIPLES OF CONDUCTING. The development of conducting — physical aspects, equipment of conductor, fundamental gestures or beats used, function of the left hand, basic problems of baton technique, full and condensed scores — will be analyzed. Score reading and development of baton technique effects. Knowledge of technical terms determining tempo, variation of tempo, character and traditions of characteristic standard band and orchestral works. Study of essential choral techniques with emphasis on phrasing, fermata, and diction. Ear training in relationship to part-singing and analysis of choral works for more intelligent interpretation. Problems of choir organization and psychology of the rehearsal. Practice conducting throughout the course. Participation in group singing is recommended. Actual conducting experience with the University Band, Symphony, and choral groups. The student conductors will be chosen from this group. Mr. Giles. 1 rec.; (plus laboratory experience with music organizations.) 1½ cr.

51-52. FREE COUNTERPOINT, CANON AND FUGUE. This course will include free counterpoint in three and four parts, double counterpoint, the writings of simple two-part inventions, choral preludes, etc. The canonic and fugal studies will be based largely upon the works of Bach and will have as their objectives the composition of fugato, fughetta, a three- and a four-voiced fugue. Mr. Manton. Prereq.: Music 16 or permission of instructor. 2 rec.; 2 cr.

71-72. COMPOSITION. Form is the foundation, the skeleton and support to imagination and expression in music. Through a study of form the student, in creating, learns to control his media of expression. The various choral, harmonic, rondo and sonata forms will in turn serve as models for composition. Prereq.: Music 51-52 or permission of the instructor. Mr. Manton. 2 rec.; 2 cr.

97-98. ORCHESTRATION AND CHORESTRATION. This course offers the study of instruments and methods of combining them into coherent arrangements arriving at successful balances for the band and orchestral arranger. The characteristics, range, and tone quality of the instruments are fully covered and transcriptions are made. Striking orchestral effects from the pens of our greatest composers are studied. Chorestration is offered during the latter part of the second semester.

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The techniques of writing for solo voices, for mixed voices, men's and women's voices, are taken up through the medium of arrangements and original work. Mr. Reynolds. Prereq.: Music 15-16. 2 rec.; 2 cr.

HISTORY, LITERATURE, AND APPRECIATION

33, 34. THE APPRECIATION OF MUSIC. Fundamentally a course to develop intelligent listening through formal analysis of the irreducible minimum of great musical masterpieces. A selection of the most important works of Bach, Handel, Haydn, Mozart, Beethoven, Schubert, Mendelssohn, Chopin, Liszt, Brahms, Franck, Tschaiikowsky, d'Indy, and many others, analyzed by the students and the instructor and played several times in the classroom. Mr. Manton, Mrs. Blickle. Two 1½ hr. rec.; 2 cr. *This course cannot be used to satisfy major requirements in Option II.*

43, (43). SURVEY OF MUSIC IN AMERICA. A comprehensive survey of the development of music in the United States from Colonial times to the present day. The various influences such as the English tradition, the German era, the French impressionistic influence and finally the quest for an American style will be presented and discussed together with the music of the most representative composers. Mr. Manton. 2 rec.; 2 cr. (Formerly given as Music 35.)

45, 46. MUSIC HISTORY AND LITERATURE. A detailed study of the actual systems, spirit, and content of the music of a period rather than resumé's of biography and critical evaluation. Music of the early church, beginning of polyphony, Ars Antiqua and Ars Nova, the Renaissance, opera and oratorio, Bach and Handel, the classic and romantic composers, on into the nineteenth and twentieth centuries, with a final survey of contemporary composers. Mr. Manton. Prereq.: Music 11-12 or Music 33, 34. 3 rec.; 3 cr.

NATURE STUDY

(See pages 186 and 278.)

NURSING

(See page 122.)

OCCUPATIONAL THERAPY

These courses are for students in Occupational Therapy curriculum. Schedule as O.T. 1, etc.

O.T. 1. CRAFTS. A series of simple projects using different media and techniques especially adapted to use in the practice of Occupational Therapy. Miss Wilkins. 2 lab.; 2 cr.

O.T. 4. CRAFTS. Stresses the therapeutic use of crafts, such as leatherwork, chip carving, and book binding. Mrs. Bredo. 3 lab.; 3 cr.

OCCUPATIONAL THERAPY

O.T. 5, 6. CRAFTS. Covers the use of metal, stencilling, dyeing, hooking, weaving, chair seating, and other popular crafts used in Occupational Therapy. Miss Wilkins and Mrs. Bredo. 3 lab.; 3 cr.

O.T. 7-8. ELEMENTARY PROCESSES IN WOOD AND PLASTICS. A basic course in the design and construction of wood and plastic objects, including a study of the nature and properties of these materials and the processes of cutting, shaping, fitting, and finishing. Practice and demonstrations cover the operation of hand and power tools, safety precautions and other problems of shop management to be encountered in Occupational Therapy. Mr. Brett. 2 lab.; 2 cr.

O.T. 10. LETTERING AND PAINTING. Freehand lettering, hand- and power-press printing; operation of various duplicating devices; silk screen process; poster design. A survey of graphic arts methods and processes as employed in Occupational Therapy. Mr. Brett. 2 lab.; 2 cr. (Formerly O.T. 9.)

O.T. 15-16. CERAMICS (POTTERY). Design and construction, methods of preparing and working clay, and the uses of pottery equipment best suited to application in Occupational Therapy work. Mr. Scheier. 2 lab.; 2 cr.

O.T. 23-24. ELEMENTARY DRAWING AND DESIGN. Exercises in drawing, painting, design, and block printing. Creative activity as a background for craft study and for its therapeutic value. Outdoor sketching. Mrs. Schoolcraft. 2 lab.; 2 cr.

O.T. 45. ELEMENTARY LIBRARY METHODS. A course in library methods giving a brief survey of the detail involved in the management of a small institutional library. 1 lab.; 1 cr.

O.T. 47. THEORY OF OCCUPATIONAL THERAPY. Historical background and evolution of Occupational Therapy. Miss Wilkins. 2 lec.; 2 cr.

O.T. 48. THEORY OF OCCUPATIONAL THERAPY. Techniques used in Occupational Therapy and their application to disease and injury. Instruction trips to hospitals and clinics, and demonstrations. Procurement and care of equipment, materials, and supplies. Miss Wilkins and Miss Thomas. 3 lec.; 3 cr.

O.T. 49-50. CLINICAL SUBJECTS. Basic information concerning the etiology, pathology, symptoms, and treatment of disease. Introductory lectures to acquaint students with medical terminology are followed by a study of general medical and surgical conditions, orthopedica, ophthalmology, otology, and psychiatry. Dr. Batchelder and visiting lecturers. Prereq.: Zoöl. 17-18. 2 lec.; 2 cr. (Given in alternate years. Offered in 1948-1949.)

UNIVERSITY OF NEW HAMPSHIRE

ORAL ENGLISH

(See SPEECH, page 216.)

PAINTING

(See THE ARTS, page 183.)

PHILOSOPHY

DONALD C. BABCOCK, *Professor.*

Courses in this Department are open to Sophomores, Juniors, and Seniors.

1, 2. INTRODUCTION TO PHILOSOPHY. Designed for orientation in the field of Philosophy, this course gives some time to each of several subjects associated with philosophic thoroughness and breadth of thought. Among these are: (1) ways of acquiring knowledge; forms of logical thought; (2) the nature of ethics; (3) the history of ideas; (4) chief hypotheses concerning the nature of mind and matter. Whenever possible, practical application to the problems of human living will be made. Mr. Babcock. 3 lec. or rec.; 3 cr.

4. ETHICS. Human beings behave as if there were standards by which conduct could be evaluated. What are "values"? What standards are there? What significance have they? Are "right" and "wrong" in any sense universal? How can we find out? This course deals with these questions, but makes application constantly to everyday problems of individual and social living. Mr. Babcock. 3 lec. or rec.; 3 cr.

11, 12. HISTORY OF RELIGIONS. Religion as an historic force in society. The nature of religion, its origins, and early development treated in connection with primitive social history. A study of the principal religions of the world, exclusive for the most part, of Christianity. Chief attention given to Hinduism, Buddhism, Zoroastrianism, Confucianism, and Mohammedanism. The history, literature, and philosophy of the oriental civilizations and culture as a background. Mr. G. R. Johnson. 3 lec. or rec.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

13, 14. HISTORICAL ORIGINS AND DEVELOPMENT OF CHRISTIANITY. The life, literature, religion, and social development recorded in the Old Testament are studied as a cultural background. An investigation of the historic data existing concerning the life, character, and teaching of Jesus. The growth and expansion of the Christian movement. Designed to furnish students an opportunity to evaluate their own religious heritage in the light of contemporary thought, and to make special study of particular intellectual problems. Mr. G. R. Johnson. 3 lec. or rec.; 3 cr. (Given in alternate years; offered in 1948-1949.)

PHILOSOPHY

15. **PHILOSOPHIC VALUES IN THE BIBLE.** A course intended first of all to make the student familiar with the actual contents of the Bible, especially its time-honored and formerly commonly quoted passages. Attention will be directed to the relation between the great utterances in the Bible and the persistent problems of human thought and living. All sectarian preference will be excluded. Thoughtful appreciation of a great cultural heritage is the result sought. Mr. Babcock. 3 lec. or rec.; 3 cr.

16. **PHILOSOPHIC VALUES IN GENERAL LITERATURE.** A continuation of Philosophy 15, except that literature other than that of the Bible will be studied. English and American authors will be chiefly used. The richness of Biblical allusion in secular literature will be noted. The inclusive purpose of the course is to attain familiarity with the literary and philosophic sources of the modern world, and to render them usable in common life. Mr. Babcock. 3 lec. or rec.; 3 cr.

19. **THE LIBERAL TRADITION IN WESTERN THOUGHT.** This course deals with the nature of the important but elusive movement of thought called liberalism; in its several aspects—intellectual, religious, economic, political, etc. It will be concerned with the limits of freedom, the nature of democracy, and anti-democratic forces. American patterns of liberalism, with their English antecedents. The modern dilemma of liberalism in a changing social order is referred to throughout. Mr. Babcock. 3 lec. or rec.; 3 cr.

51, 52. **SEMINAR.** Intensive study of a selected topic or field. Designed for those who wish to cultivate the philosophical way of life for further self-improvement. Open to students who have had a course in philosophy, or by permission of the instructor. Mr. Babcock. 2 lec. or rec.; 2 or 3 cr.

55, 56. **PHILOSOPHY OF HISTORY.** (1) Some of the less obvious aspects of chronology; periodizing as a means of interpreting history; (2) historical geography; (3) culture-history, including the historical side of everyday life; (4) the philosophy-of-history proper, or a study of some of the ways in which history as a whole has been viewed, including both deterministic theories and the study of biography. Mr. Babcock. 3 lec. or discussions; 3 cr.

PHOTOGRAPHY

(See THE ARTS, pages 183-184.)

UNIVERSITY OF NEW HAMPSHIRE

PHYSICAL EDUCATION FOR MEN

CARL LUNDHOLM, *Professor, Director of Physical Education and Athletics*; HENRY C. SWASEY, *Associate Professor*; PAUL C. SWEET, *Associate Professor*; JOSEPH J. PETROSKI, *Instructor*; EDWARD J. BLOOD, *Instructor*; JAMES W. GLASSFORD, *Instructor*; EDWARD M. STANCZYK, *Instructor*.

REQUIREMENTS: All Freshmen and Sophomore men students and first-year students in the Two-Year Curriculum in Agriculture are required to register for Physical Education. Each student must provide himself with an activity suit consisting of a gray sleeveless jersey, gray trunks, white woolen socks, and rubber-soled tennis or basketball shoes. This suit must be worn at all classes in Physical Education.

31, 32. PHYSICAL EDUCATION. Development of the organic system generally; stimulation of the neuromuscular system through physical activity; encouragement of a proper attitude toward play; development of an appreciation of physical activities as worthwhile leisure-time recreation. Required of Freshmen. 2 periods; $\frac{1}{2}$ cr. Students passing will get a grade of cr.

33, 34. PHYSICAL EDUCATION. Continuation of 31, 32. Required of Sophomores. 2 periods; $\frac{1}{2}$ cr. Students passing will get a grade of cr.

TEACHER PREPARATION COURSES

Required of students registered in the University Physical Education Teacher Preparation Curriculum for Men. Elective for other students by special permission from the Director of Physical Education and Athletics.

23. PRINCIPLES OF PHYSICAL EDUCATION. The aims, objectives, and principles of Physical Education and the historical factors which have influenced the physical life of nations. Mr. Lundholm. 3 lec.; 3 cr.

40. WINTER SPORTS. Instruction and practice in ski jumping, downhill, slalom, and cross country skiing, and snowshoeing. Conditioning of men, waxing of skis, and selection and care of equipment. The organization and management of winter carnivals and other competitions. Special emphasis on methods of teaching skiing. 1 rec.; 2 lab.; 2 cr. (Not offered in 1948-1949.)

45. FOOTBALL. A history of football with consideration of its educational implications and an analysis of the various systems of play. Instruction in team and individual offensive and defensive fundamentals. The rules, theory, strategy, generalship of team play, and the responsibilities of the coach for the physical welfare of the team. 1 rec.; 2 lab.; 2 cr.

PHYSICAL EDUCATION

46. **BASEBALL.** Theoretical and practical consideration of the basic principles of batting and fielding; the fundamentals of each position; special stress on problems involving team play, coaching methods, physical conditioning, and rules; a history of the game with a consideration of its educational values. 1 rec.; 2 lab.; 2 cr.

47. **TRACK AND FIELD ATHLETICS.** Instruction and practical demonstrations in starting, sprinting, middle distance and distance running, relay racing, hurdling, high and broad jumping, pole vaulting, shot putting, discus, hammer, and javelin throwing. Methods of preparing contestants for the various events. 1 rec.; 2 lab.; 2 cr.

48. **BASKETBALL.** History of basketball with a consideration of its educational values. Theory and practice in the fundamentals of individual offense and defense. The various styles of team offense and defense and rules of the game. Problems in handling and conditioning a team. 1 rec.; 2 lab.; 2 cr.

61. **PROBLEMS OF TEACHING IN PHYSICAL EDUCATION.** Methods and materials of instruction, theories of play, and actual practice for the successful teaching of recreational activities in school, on the playground, and in the community. Studies of activities adapted to different levels of maturity. 3 rec.; 3 cr.

63. **CARE AND PREVENTION OF INJURIES.** Nature and causes of injuries incident to physical activities, the common hazards of play, and preventative measures for children and athletes are discussed. First aid principles are presented. Elective for Seniors who have taken one of the following: P.E. 40, 45, 46, 47, 48; and Juniors and Seniors in the O.T. Curriculum. 2 rec.; 2 cr.

65. **ADMINISTRATION OF PHYSICAL EDUCATION IN SECONDARY SCHOOLS.** The aims and objectives of health and physical education. Organization and supervision of a complete unified program of health and physical education including the legal aspects, intra-mural and inter-scholastic athletics, medical problems, budgeting, financing, maintenance of equipment, publicity programs, and office management. Each student will be given an opportunity to serve on a committee to draw up an original program of health and physical education in a theoretical or actual situation found in some secondary school. Prereq.: Zoöl. 17-18; P.E. 23 and 61; and two courses in the coaching of sports. These last may be taken concurrently. 3 rec.; 3 cr.

EDUCATIONAL-PHYSICAL EDUCATION. (Ed-PE) 93 (93). **DIRECTED TEACHING IN PHYSICAL EDUCATION.** Given in the Department of Physical Education and Athletics for Men. Prereq.: Zoöl. 17-18; P.E. 23, and 61. The student must have completed the methods course in the sport which he is directing or take the course concurrently. 2 to 4 cr.

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EDUCATION-PHYSICAL EDUCATION. (ED-PE) 94. SUPERVISED TEACHING IN PHYSICAL EDUCATION IN THE FIELD. An opportunity under joint supervision of the Physical Education and Education Departments, to coach athletics in secondary schools and to assist in supervising a recreational program. Prereq.: Zoöl. 17-18. P.E. 23, 65 and methods courses in those sports in which the student intends to become actively engaged. 2 to 4 cr. (Not offered in 1948-1949.)

PHYSICAL EDUCATION FOR WOMEN

MARION C. BECKWITH, *Associate Professor*; EVELYN BROWNE, *Assistant Professor*; CAROLINE S. WOOSTER, *Assistant Professor*; PHYLLIS ONGLEY, *Instructor*; SALLY DUNNING, *Instructor*; PRISCILLA L. RABETHGE, *Instructor*; JEANETTE L. GOODWIN, *Instructor*; CATHERINE M. SHEEHY, *Instructor*.

The Department of Physical Education for Women aims to develop in each individual the physical, social, and mental qualities which will enable her to meet successfully the demands of modern society. The courses include recreative and leisure-time activities, vigorous team sports and gymnastics, rhythmic and dance activity, and the opportunity to participate in club activities which are provided for the more highly skilled. This program is supplemented by the extra-curricular competition offered by Women's Recreation Association.

REQUIREMENTS. All women students are required to complete at least one credit of physical activity for each of the first six semesters they attend the University. Freshmen women should register for P.E. 1, 2; Sophomores for P.E. 3, 4; and Juniors for P.E. 5, 6. One additional activity (it may be a club) may be elected each semester for additional credit. Except by special permission, the same activity shall not be credited more than twice.

PHYSICAL EXAMINATIONS. Each student must, before entering, have had a physical examination by a Physician. A posture test will be given by the Physical Education staff. Individual gymnastics is required of each Freshman whose physical condition indicates this need. Students with physical disabilities must follow the same procedure as other students including registration for Physical Education credit. In most cases, modified activities are recommended by the University Physician.

MOTOR ABILITY TEST. All students are expected to take the motor ability test at the time of entering the University and at the completion of their Physical Education requirement. In addition, this test is used as a basis for determining club membership and credit for Advanced Instruction. (See Advanced Instruction.)

PHYSICAL EDUCATION FOR WOMEN

ADVANCED INSTRUCTION. To provide for the more highly skilled student and to encourage the interest and ability of the less skilled, the Department of Physical Education for Women includes in its program numerous club and interclass activities in which Advanced Instruction is given by a member of the teaching staff.

Membership: Open to any University student.

Qualifications: Club standards or membership of class squad.

Credit: Upperclassmen may, if the results of the motor ability test show they are qualified to do so, substitute: (1) club activities (except Durham Reelers) for their 3 hours of Physical Education requirement, or (2) Durham Reelers or interclass activities for their rhythemics (except Sophomore P.E. majors.)

Clubs: Dance — Instructor, Miss Ongley; Riding — Instructor, Mr. Doyle; Riflery — Instructor, Mrs. Sheehy; Skating — Instructor, Miss Ongley; Durham Reelers — Instructor, Miss Rabethge; W. R. A. — Instructor, Miss Browne and staff.

Women students following any Teacher Training Curriculum in the University are urged to elect for required Physical Education the following activities: Folk dancing, community games, speedball, hockey, basketball, and American country dancing.

REQUIRED COSTUME AND EQUIPMENT. Special gymnasium uniform consists of blue cotton tennis-type dress and shorts, white socks, and regulation gymnasium sneakers. Students are required to furnish their own individual equipment for such activities as tennis, skiing, and skating. Equipment is furnished for golf, fencing, badminton, hockey, archery, lacrosse, and softball.

1, 2; 3, 4; 5, 6. **PHYSICAL EDUCATION.** Students should register for one activity (meeting two hours a week) from the lists below. One additional hour of fundamentals (Freshmen) or rhythemics (Upper-classmen)* will be arranged by the Department. 3 hours; 1 cr.

ACTIVITY COURSES

(elect one a quarter)

First Quarter: Archery, badminton, modern dance, hockey, individual gym, riding (elem. + inter. + advanced), speedball, tennis (elem. + inter.) touch football.

Second Quarter: Basketball, badminton, modern dance, community games, individual gym, Am. country dance, folk dancing, fencing, skating, figure skating, skiing (elem.), riflery.

Third Quarter: Basketball, badminton, modern dance (elem. +

*See Advanced Instruction for substitutions.

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int.), community games, individual gym, Am. country dance, fencing, skating, skiing (elem. + inter.), riflery, volleyball.

Fourth Quarter: Archery, badminton, folk dance, golf, individual gym, riding (elem. + inter. + advanced), lacrosse, softball, tennis (elem. + inter.).

Required of Freshmen, Sophomores, and Juniors. 3 periods; 1 cr.

7, 8. PHYSICAL EDUCATION. Elect courses from the list under P.E. 1, 2. Elective for Seniors. 2 hours. 1 cr.

11, 12; 13, 14; 15, 16; 17, 18. PHYSICAL EDUCATION. Elective courses open to Freshmen, Sophomores, Juniors, and Seniors respectively may be chosen from the lists under P. E. Ed. 1, 2. 2 hours; 1 cr.

THEORY COURSES

23. PRINCIPLES OF PHYSICAL EDUCATION. See course description under Department of Physical Education for Men.

24. ORGANIZED CAMPING. The methods, objectives, and purposes of organized camping for groups; standards for organized summer camps, facilities, equipment, food, sanitation, health, and safety requirements; departments, programs, and leadership qualifications. Mrs. Wooster. Elective for Sophomores, Juniors, and Seniors. 3 lec. or rec.; 3 cr.

(36.) RECREATION LEADERSHIP. Organization, program planning, and administration of social recreation, clubs, and playgrounds; philosophy of recreation. Miss Rabethge. Elective for Sophomores, Juniors, and Seniors. 2 lec. or rec.; 1 lab.; 3 cr.

53, 54. SURVEY OF DANCE. A survey of methods, materials and techniques in teaching dance as well as a history of dance as an art and as a phase of education. Includes instruction in social, tap, and fundamentals of rhythm and first semester; in folk and square dancing, second semester. Miss Ongley, Miss Dunning, and Miss Rabethge. Prereq. to 53: Modern Dance I and II. Open to Physical Education majors or by permission of instructor. 1 lec.; 2 lab.; 2 cr.

55. REMEDIAL GYMNASTICS. The adaptation of exercise to individual needs, capacities, and limitations; physical abnormalities and their correction. Theory and technique of massage. Mrs. Wooster. Prereq.: Zoöl. 17-18. 2 lec. or rec.; 2 lab.; 3 cr.

56. HEALTH EDUCATION. A general health course designed to acquaint the student with principles, teaching methods, and materials in modern medical treatment in immunity and disease; safety education, first aid, and physical inspection. Mrs. Sheehy. Prereq.: Zoöl. 17, 18. 3 lec. or rec.; 3 cr.

PHYSICAL EDUCATION FOR WOMEN

63, 64. THE THEORY AND COACHING OF TEAM SPORTS FOR WOMEN. The methods involved in the teaching of team games and lead-up games with emphasis on coaching methods and officiating. Miss Dunning. Prereq.: Elementary courses in team sports. 2 lec. or rec.; 2 lab.; 2 cr.

66. ADMINISTRATION OF PHYSICAL EDUCATION IN SECONDARY SCHOOLS. Administrative relationships and methods in the conduct of physical education and health education in the secondary schools. Preparation of general administrative policies; facilities and equipment. Miss Browne. 3 lec.; 3 cr.

73, 74. THE THEORY AND COACHING OF INDIVIDUAL SPORTS FOR WOMEN. A study of the advanced techniques and methods involved in the teaching of tennis, archery, skating, skiing, badminton, bowling, golf, and swimming. Coaching methods and materials will be emphasized. The history, equipment, courtesies, rules and tactics of each sport will be discussed. Miss Beckwith, Miss Browne. Prereq.: Elementary work in six of the courses listed above. Open to Senior majors or others by permission of instructor. 1-2 lec. or rec.; 1-2 lab.; 1-2 cr.

P.E.-Ed 91. PROBLEMS IN THE TEACHING OF PHYSICAL EDUCATION FOR WOMEN. The methods, material and organization of a comprehensive program of activities for use in the elementary schools. Miss Goodwin. 3 lec. or rec.; 3 cr.

P.E.-Ed 92. DIRECTED TEACHING OF PHYSICAL EDUCATION FOR WOMEN. Opportunity for teaching of Physical Education activities under direction, primarily in the elementary and secondary schools. Miss Goodwin. Prereq.: P.E.-Ed 91. 1 lec. or rec.; 2-5 lab.; 3-6 cr.

PHYSICS

FREDERIC A. SCOTT, *Professor*; HORACE L. HOWES, *Professor*; WILLIAM H. HARTWELL, *Associate Professor*; HARRY H. HALL, *Associate Professor*; DUANE F. CARLISLE, *Assistant Professor*; DAVID G. CLARK, *Assistant Professor*; ALFRED W. CALCUTT, *Instructor*; CHARLES B. HASKELL, *Instructor*; E. WELLS HUBBARD, *Instructor*.

1-2. INTRODUCTORY PHYSICS. Mechanics, properties of matter, heat, magnetism, electricity, wave motion, sound and light. Demonstration lectures, laboratory, and recitation. A knowledge of high-school algebra and plane geometry is essential. This course is not intended for students in the College of Liberal Arts who expect to complete a major requirements in Physics. 2 lec.; 1 rec.; 1 lab.; 4 cr.

21-22. GENERAL PHYSICS. Mechanics; heat; light; wave motion; sound; electricity and magnetism. Prereq.: Math. 17-18 either passed or taken concurrently. 2 lec.; 3 rec.; 1 lab.; 6 cr.

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43-44. **INTERMEDIATE LABORATORY.** This course is intended to augment the student's contact with physical equipment and improve his laboratory technique in precise measurements. Experiments performed largely have bearing on medical problems. Electricity and optics are stressed to a large degree. Prereq.: Phys. 1-2. Open only to pre-medical students. 1 lab.; 1 cr.

64. **ELECTRICAL MEASUREMENTS.** Experiments on the use of precision potentiometers, the constants of sensitive galvanometers, low resistance by Kelvin double bridge, high resistance by the method of leakage and by direct deflection, the use of alternating current bridges for measuring capacity, self and mutual inductance and frequency, the characteristics of certain photoelectric cells. Prereq.: Phys. 21-22. 1 lec.; 1 lab.; 3 cr.

81. **OPTICS.** Geometrical and physical optics, refraction, lens systems, wave theory of light, diffraction, interference, polarization, etc., spectroscopy. Prereq.: Phys. 21-22; Math. 51 passed or taken concurrently. 3 rec.; 1 lab.; 4 cr.

82. **HEAT.** Thermometry, pyrometry, calorimetry, radiation, heat conduction and thermodynamics. Prereq.: Phys. 21-22; Math. 51-52 passed or taken concurrently. 3 rec.; 1 lab.; 4 cr.

83-84. **THEORY OF ELECTRICITY AND MAGNETISM.** Electrostatics, magnetostatics, dielectric theory, electromagnetics, magnetic circuits, alternating currents, complex impedance, thermoelectricity, electromagnetic field. Prereq.: Phys. 21-22; Math. 51-52 passed or taken concurrently. 3 lec.; 1 lab.; 4 cr.

86. **ADVANCED MECHANICS.** An analytical treatment of classical mechanics including such topics as the methods of plane statics and dynamics and their applications, impulsive forces, oscillations, statics and dynamics in space. Prereq.: Math. 51-52 passed or taken concurrently. 3 rec.; 3 cr.

91-92. **MODERN PHYSICAL THEORIES.** Recent developments in Physics, including Maxwell's field equations, photoelectric effect, quantum theory, X-rays, relativity, nuclear theory. Prereq.: Phys. 83-84 or the equivalent. 3 rec.; 3 cr.

93-94. **THEORETICAL PHYSICS.** An introduction to the applications of mathematics to physics, including such topics as kinetic theory, elasticity, fluid mechanics, sound, theory of vibrations, etc. Prereq.: Math. 51 and 52. 3 rec.; 3 cr.

95-96. **ADVANCED LABORATORY.** Laboratory work of research type. Special problems are assigned to student who is placed on his own initiative. Prereq.: Senior standing in Physics in College of Technology. 2 lab.; 2 cr.

PHYSICS

97. ELECTRICAL DISCHARGE THRU GASES. Properties of gaseous ions, electron theory, mobility, ionization and resonance potentials, vacuum tube phenomena, etc. Prereq.: Phys. 83-84. 3 rec.; 1 lab.; 4 cr.

99. SPECIAL TOPICS. A course designed to cover any selected topics not sufficiently well covered in a general course. Prereq.: Math. 51-52 passed or taken concurrently. Senior standing in Physics in College of Technology. 1, 2 or 3 cr.

COURSES PRIMARILY FOR GRADUATE STUDENTS

101, 102. INTRODUCTION TO ATOMIC PHYSICS. A course of lectures with accompanying problems and outside reading treating the following subjects: The fundamental experiments and equations of static and dynamic electricity leading to the electromagnetic theory of Maxwell; various experimental methods of determining the Avogadro number by diffusion, Brownian movement, and measurement by dielectric constant; radiation from accelerated charges, and special relativity; various black body radiation laws and the quantum hypothesis; the Bohr postulates and hydrogenic solution of the Schrodinger equation. Time permitting, other topics will be discussed depending on the interests of the class, such as the photo electric effect, the quantum theory of specific heats, or the electron theory of metallic conduction. Prereq.: Phys. 57, 58. 3 lec.; 3 cr.

104. LUMINESCENT RADIATION. Lectures descriptive of experimental researches in the luminescence of solids; with some attention to the luminescence of gases, and non-blackbody radiation in general. Prereq.: Phys. 7, 8, 9, 10, 14, or the equivalent. 3 lec.; 3 cr.

105, 106. ELECTRIC OSCILLATIONS AND ELECTRIC WAVES. Free and forced oscillations of coupled circuits, applications of Fourier's theorem to steady state and transient response of networks, Maxwell's field equations, free and guided waves, reflection, refraction, absorption, application to shielding, waves on wires, wave guides, radiation. Prereq.: Phys. 7, 8, 61; Math. 51-52.

POLITICAL SCIENCE

(See GOVERNMENT, pages 223-226.)

POULTRY HUSBANDRY

T. BURR CHARLES, *Professor*; FRED E. ALLEN, *Assistant Professor*; ALAN C. CORBETT, *Assistant Professor*; RICHARD C. RINGROSE, *Assistant Professor*; CARL W. HESS, *Assistant Professor*.

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2. FARM POULTRY. The general principles of Poultry Husbandry and their practical applications with emphasis on factors of culling, breeding, housing, feeding, marketing, diseases and parasites, incubation and management. Mr. Charles. 2 lec.; 1 lab.; 3 cr.

6. POULTRY FEEDING. The principles of feeding; analysis of recent experimental work and current feed problems. Each student will care for a group of birds for several weeks for practical observation and collection of data. Mr. Ringrose. 2 lec.; 1 lab.; 3 cr. (Given in alternate years; offered in 1948-1949.)

7. POULTRY HOUSING. Design and construction of poultry houses and equipment; costs of materials; management principles. Mr. Charles. 1 lec.; 1 lab.; 2 cr. (Given in alternate years; not offered in 1948-1949.)

17. POULTRY BREEDS AND JUDGING. The origin, history, and classification of breeds. Theory and practice in judging fowls for egg production and exhibition and for intercollegiate contests. Mr. Hess. 2 lec.; 1 lab.; 3 cr.

18. INCUBATION AND BROODING. The principles involved in incubation and brooding of poultry; embryonic development. Students individually operate incubators and care for groups of chicks. Mr. Ringrose. 2 lec.; 1 lab.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

19. POULTRY MARKETING. The preparation of poultry and eggs for market. Egg qualities and grades, candling and packaging; egg and poultry market conditions; practical instruction in killing, picking, and dressing. Mr. Ringrose. 2 lec.; 1 lab.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

20. POULTRY DISEASES. The anatomy of the fowl; diseases and parasites encountered in poultry practice; methods of prevention and control. Mr. Corbett. 3 lec.; 1 lab.; 4 cr. (Given in alternate years; not offered in 1948-1949.)

23-24. POULTRY PRACTICE. Practical work at the University Poultry Plant in the hatching, rearing, and care of chickens. Mr. Charles. Ten hours a week of practical work. 2 cr. (NOTE: By permission, students with previous practical poultry experience may substitute 4 semester credits of electives for this course.)

26. POULTRY MANAGEMENT. The application of successful business principles to poultry farming; study of surveys and production costs. As a part of the laboratory work, a detailed "three year" development plan of a poultry farm will be studied. Mr. Charles. 2 lec.; 1 lab.; 3 cr. (Given in alternate years; offered in 1948-1949.)

POULTRY HUSBANDRY

27, 28. **POULTRY SEMINAR.** Students abstract experimental data and report on various current poultry topics. Thesis required. Mr. Charles, Mr. Ringrose, Mr. Hess, Mr. Corbett. 1-hour conference; 1 cr.

29. **POULTRY BREEDING.** The genetic principles involved in breeding for egg production, including practical application and demonstration. Mr. Hess. 2 lec.; 2 cr. (Given in alternate years; offered in 1948-1949.)

53, 54. **POULTRY PROBLEMS.** Students are given a selection of various problems and are required to compile and present accurate and detailed information in their solution. Mr. Charles, Mr. Corbett, Mr. Ringrose, Mr. Hess. 1 to 3 cr.

56. **TURKEY BREEDING AND PRODUCTION.** Subject matter covered includes breeds and their commercial importance; breeding methods, including the National Turkey Improvement Plan and Record of Performance; brooding and rearing methods; feeding, housing, and management practices. Mr. Charles. 2 rec.; 1 lab.; 3 cr. (Given in alternate years; not offered in 1948-1949.)

COURSES PRIMARILY FOR GRADUATE STUDENTS

101, 102. **ADVANCED POULTRY DISEASES.** A study of the cause and effects of disease applied to the body as a whole. Lectures supplemented by laboratory demonstrations of the basic pathology of diseased tissue. A detailed discussion of diagnosis, prevention, control, and treatment of poultry diseases. Mr. Allen and Mr. Corbett. Pre-req.: Poultry Husbandry 20, Bact. 2, and Zoöl. 53 and 54. (Zoöl. 53, 54 may be taken simultaneously with Poultry Husbandry 101, 102.) 3 lec.; 3 cr.

103, 104. **ADVANCED POULTRY SCIENCE.** A comprehensive study of (1) the inheritance of morphological and physiological characters in poultry; (2) problems involved in the production, processing and sale of poultry products, and (3) the study of metabolism and physiology of digestion with special emphasis on mineral needs and deficiency diseases of poultry. Mr. Charles, Mr. Ringrose, and Mr. Hess. Pre-req.: Poultry Husbandry 29, 19, and 6, or their equivalent. 2 lec.; 1 lab.; 3 cr.

105, 106. **SEMINAR.** A survey of recent literature and research in poultry husbandry. Department Staff. 1 cr.

107, 108. **POULTRY PROBLEMS.** Students are given a selection of various problems and are required to compile and present accurate and detailed information in their solution. Hours and credits, not to exceed three, are to be arranged.

PRE-DENTAL

(See page 119.)

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PRE-LAW

(See page 120.)

PRE-MEDICINE

(See page 124.)

PSYCHOLOGY

HERBERT A. CARROLL, *Professor*; GEORGE M. HASLERUD, *Associate Professor*; ELMER D. WEST, *Associate Professor*; RUTH B. KELLY, *Instructor*; DANIEL G. DITTMER, *Instructor*; PAUL H. MCINTIRE, *Instructor*.

1, (1). ELEMENTARY GENERAL PSYCHOLOGY. An introductory course designed to familiarize the student with fundamental concepts of human behavior, emphasizing the functional applications of basic principles. Mr. Dittmer and Mr. McIntire. 3 lec.; 3 cr. *This course cannot be used to satisfy major requirements.*

2. ADVANCED GENERAL PSYCHOLOGY. A systematic study of Psychology as a science with emphasis on the experimental evidence for generalizations about behavior, including attention to topics of intelligence, personality, motivation, emotion, learning, memory, sensation, perception, thinking, dreaming, and the nervous system. Mr. Haslerud and Mr. McIntire. Prereq.: Psych. 1. 3 lec.; 3 cr.

33. INDUSTRIAL PSYCHOLOGY. The principles of Psychology applied to industry and business, including advertising, sales, and customer research. Mr. Dittmer. 3 lec.; 3 cr. *Not open to Freshmen.*

36. PSYCHOLOGY OF PERSONNEL. The principles of Psychology applied to the management of personnel and labor relations in business and industry, including a study of the techniques involved. Mr. Dittmer. Prereq.: Psych. 33. 3 lec.; 3 cr. *Not open to Freshmen.*

47, (47). MENTAL HYGIENE. An examination of the fundamental emotional satisfactions desired by human beings and a consideration of the several ways in which these desires are thwarted. The mental conflicts growing out of such thwartings and ways of resolving them will be the central theme of the course. Specific application of the principles of mental health will be made to the problems of college students. Mr. Carroll and Miss Kelly. 3 lec.; 3 cr. *Not open to Freshmen.*

48. PSYCHOPATHOLOGY. The distortion of the psychological functions of perception, association, memory, judgment, and thinking as found in the maladjusted individual in need of institutional care. The symptoms distinguishing the various types of mental disorders and the more

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common forms of the psychoses and neuroses are presented to enable the student to recognize typical cases. Mr. Haslerud. Prereq.: Psych. 47. 3 lec.; 3 cr. *Not open to Freshmen.*

51. **PSYCHOLOGY OF CHILDHOOD.** The mental processes and reactions of the normal child from birth to adolescence studied in order to obtain a comprehensive understanding of the development of the personality of the child. Special emphasis is placed on problems of parents and teachers and the importance of childhood for later adjustment. Mr. Haslerud. Prereq.: Psych. 1. 3 lec.; 3 cr.

52. **PSYCHOLOGY OF ADOLESCENCE.** An examination of the physical, psychological, and social development of the individual during the period between childhood and maturity, and the implications for the individual, parent, teacher, and community of the problems characteristic of this period. Mr. Haslerud. Prereq.: Psych. 2. 3 lec.; 3 cr.

57. **EXPERIMENTAL PSYCHOLOGY.** A study of experimental work in Psychology, supplemented by class experiments. Emphasis will be placed on scientific method and experimental procedure. Mr. Haslerud. Prereq.: Psych. 2. 2 lec.; 2 lab.; 3 cr.

58. **PSYCHOLOGY OF LEARNING.** A study of the principles and theories of learning and forgetting and their application to habit formation, social learning, and educational problems. Mr. Haslerud. Prereq.: Psych. 2. 3 lec.; 3 cr.

63. **INDIVIDUAL DIFFERENCES.** A study of individual differences with special emphasis on intellectually gifted and mentally subnormal children. Mr. West. Prereq.: Psych. 2. 3 lec.; 3 cr.

67. **PRINCIPLES OF MEASUREMENT.** A study of the problems involved in objectively measuring mental aptitudes and the results of learning by means of informal and standardized group tests. Approximately one half of the course time will be given to work on the computation and interpretations of elementary statistical measures. Prereq.: Psych. 2. 3 lec.; 3 cr.

74. **PSYCHOLOGY OF PERSONALITY.** A scientific approach to the analysis of personality in terms of structure, development, classification, and methods of measurement. Mr. Dittmer. Prereq.: Psych. 2. 3 lec.; 3 cr.

78. **PHYSIOLOGICAL PSYCHOLOGY.** A study of the organic bases of behavior. Psychologically relevant topics concerning the nervous system, endocrine glands, sense organs, etc., will be considered. Mr. Haslerud. Prereq.: Psych. 2. 3 lec.; 3 cr. (Formerly given as Psych. 77.)

83. **SYSTEMATIC PSYCHOLOGY.** A critical examination of the points of view of the various schools of Psychology. Considerable attention is given to the contributions which the more important of these schools have made to contemporary thought in Psychology. Mr. Dittmer. Prereq.: Psych. 2. 3 lec.; 3 cr.

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98, (98). SEMINAR IN PSYCHOLOGY. Mr. Carroll. Prereq.: 15 semester credits in Psych. 3 cr.

COURSES PRIMARILY FOR GRADUATE STUDENTS

105 (105). CLINICAL PSYCHOLOGY. A study of procedures in the diagnosis and therapy of behavior disorders. Instruction is given in the administration and interpretation of personality tests and inventories. Directive and non-directive methods in psychotherapy are compared and critically evaluated. Mr. Carroll. Prereq.: Psych. 47 or its equivalent, and permission of the instructor. 3 lec.; 3 cr.

106. CLINICAL PROBLEMS. Attention is concentrated on actual cases. In addition to a study of reports on individuals with behavior disorders, opportunities are provided for field work. Mr. Carroll. Prereq.: Psych. 105. 3 cr.

107. DYNAMICS OF BEHAVIOR. A comprehensive study of the biological, social, and developmental aspects of motivation and emotion. Mr. Haslerud. Prereq.: Permission of the instructor. 3 lec.; 3 cr.

110. TECHNIQUES OF COUNSELING. A study of the psychological factors, techniques, and procedures involved in the analysis of the individual's vocational, educational, and social adjustments. Mr. West. Prereq.: Psych. 67 and permission of the instructor. 3 lec.; 3 cr.

114. STATISTICAL PROBLEMS IN PSYCHOLOGY. Advanced study of techniques for analyzing and interpreting experimental and testing problems, including psychophysical methods and factor analysis. Mr. Haslerud. Prereq.: Psych. 67 or its equivalent. 3 lec.; 3 cr.

121. GROUP TESTING. Demonstration and experience in administration and interpretation of group tests of personality, interests, achievement, capacity, and aptitude. Students will be required to do field work in testing. Mr. Carroll. Prereq.: Psych. 67 or equivalent and consent of the instructor. 3 cr.

122. INDIVIDUAL TESTING. Demonstrations and experience in the administration and interpretation of individual tests. Detailed study will be made of the Terman-Merrill Revision of the Binet-Simon Scales and the Wechsler-Bellevue Intelligence Scales. Students will be required to purchase testing materials and to do field work in testing. Mr. Carroll. Prereq.: Psych. 121 or equivalent and consent of the instructor. 3 cr.

131, 132. GRADUATE SEMINAR. By lectures, readings in source materials (primarily current psychological journals), and reports, the student is directed in a critical examination of psychological theory and practice and in a synthesis of psychological knowledge. At least one semester required for Master's Degree in Psychology. Mr. Haslerud in charge. Prereq.: Undergraduate major in Psychology or permission of the instructor. 3 cr.

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181, 182. *READING AND RESEARCH IN PSYCHOLOGY.* With the advice and consent of the instructor, a student prepared by training and experience to do independent work may register for this course. The student will undertake assigned problems and readings under the guidance of the instructor. Hours and credits by arrangement. Mr. Carroll and Mr. Haslerud.

PUBLIC SPEAKING

(See page 216.)

RADIO

(See page 216.)

RELIGION

(See courses in Department of Philosophy, page 258.)

SECRETARIAL STUDIES

(See page 201.)

SOCIAL SCIENCE

The course listed is given under the auspices of the Division of Social Science of the Faculty of the College of Liberal Arts. This Division includes the Departments of Economics and Business Administration, History, Government, Psychology, and Sociology.

81, (81). *UNDERGRADUATE INTERNESHIPS.* Actual field work in a department of the state or local government. The work will be in charge of the department or agency to which the student is appointed. Arrangements for each student will be in charge of the Head of the Department involved or his representative. Prereq.: Background work for the internships, substantial work in Gov't., Econ., B.Ad., Hist., or Soc. For Juniors and Seniors. Not more than 16 credits. No more than 9 credits may be counted toward the completion of major requirements.

SOCIAL SERVICE

(See page 127.)

SOCIOLOGY

CHARLES W. COULTER, *Professor*; JOSEPH E. BACHELDER, JR., *Associate Professor*; HERBERT J. MOSS, *Assistant Professor*.

1. *PRINCIPLES OF SOCIOLOGY.* The underlying laws of human society, especially those governing the origin, growth, and decline of institutions; group relationships to biological and geographic environments; social processes such as conflict, competition, imitation, accom-

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modation, co-operation, assimilation, and differentiation; societal isolation; culture, its organization, content, location, and formation; social institutions, including the familial, religious, economic, educational, recreational, and political; social change with its attendant maladjustments, and control. Mr. Moss. 3 lec. or rec.; 3 cr. *This course cannot be used to satisfy major requirements.*

2. SOCIAL PSYCHOLOGY. The social aspects of the development and functioning of the personality, analysis of the processes through which the individual's impulses are shaped and confined by the cultural patterns of the group, and of the factors which determine attitudes, wishes, habits, and social roles; a critical evaluation of the various methods used at present for the study of human nature. Mr. Moss. 3 lec. or rec.; 3 cr. *This course cannot be used to satisfy major requirements.*

22. AMERICAN POPULATION PROBLEMS. A course dealing with the growth, distribution, mobility and ecology of population in the United States. Statistical estimates will be made of the significance of such population factors as: age, sex, race, religion in sectionalization, social coherence and other social problems. 3 lec. or rec.; *Not open to Freshmen.*

33. CULTURAL ANTHROPOLOGY AND ETHNOLOGY. (1) A comparative study of primitive folk-ways, institutions, and social organization, marriage, economic activities, religion, property inheritance and folklore; culture and the principles of its development; the significance of primitive culture for an understanding of contemporary civilization. (2) A comparative study of peoples; environmental factors, societal effect of invasion; colonization, and linguistic fusions; race and class struggles; jingoism, race relations in mid-European territory and in the Far East; the problem of world peace. Mr. Coulter. Prereq.: Soc. 1 and 2, or by special permission. 3 lec. or rec.; 3 cr.

34. THE IMMIGRANT AND THE NEGRO. Negro and immigrant heritage; problems of assimilation and Americanization. Intensive study of selected groups, the Negro, the Jew, the Italian, the Pole, the Greek, the French-Canadian, and the Japanese. Mr. Coulter. Prereq.: Soc. 1 and 2, or by special permission. 3 lec. or rec.; 3 cr.

37. URBAN AND RURAL SOCIOLOGY. The foundation materials for the study of both urban and rural life; the physical setting, population shifts, contrasting incomes, habits, attitudes, the significance of the improvement of means of communication, factors involved in the rapid growth of cities since 1800: physical structure of the city; processes of internal growth of city areas. Mr. Moss. Prereq.: Soc. 1 and 2 or by special permission. 3 lec. or rec.; 3 cr.

SOCIAL SCIENCE

41. **SOCIAL PATHOLOGY.** The social factors involved in alcoholism, blindness, deafness, sickness, illness, accidents, mental deficiency, mental disorders, drug addiction, prostitution, poverty, and vagrancy. The relation of personal, institutional, and community disorganization to social and individual pathologies. Remedial measures based upon a discussion of human nature and the physical conditions of modern life. Especially recommended for pre-medical, pre-legal, and other students who will be handling social variants in their professions. Prereq.: Soc. 1 and 2. 3 lec. or rec.; 3 cr.

42. **COMMUNITY ORGANIZATION.** Town and country community organization with respect to natural and interest groupings; the survey; methods of analyzing problems of community organization; methods of utilizing institutions and equipment in the development of programs and organizations for health, recreation, general welfare, and control. Prereq.: Soc. 1 and 2, or by special permission. 3 lec. or rec.; 3 cr.

71. **CRIME AND ITS SOCIAL TREATMENT.** The increase, extent, and more popular theories of crime and delinquency, juvenile and adult. Case studies of individual delinquents with special reference to the influence of family and neighborhood environments; typical social situations and their influence; programs for the social treatment of crime, the reorganization of reformatory, institutions, classification of offenders for separate treatment, the "honor system," limited self-government, parole and probation, and the juvenile court as agencies for the prevention of delinquency. Mr. Coulter. Prereq.: Soc. 1 and 2, or by special permission. 3 lec. or rec.; 3 cr.

72. **THE FAMILY.** The rise of the marriage institution and the family. Divorce, desertion, changing status of women, child welfare, child labor laws, and related modern problems. Mr. Coulter. Prereq.: Soc. 1 and 2, or by special permission. 3 lec. or rec.; 3 cr.

73. **AN INTRODUCTION TO SOCIAL WORK AND PUBLIC WELFARE.** The nature of social work; history of social work; contrasting techniques of family welfare, child welfare, group work, medical and psychiatric social work; public assistance programs (Old Age Assistance, Aid to Needy Blind, Aid to Dependent Children); direct relief; Social Security legislation; intergovernmental relationships and responsibilities; the organization and administration of public welfare in the State of New Hampshire. Mr. Moss. Prereq.: Soc. 1 and 2. 3 lec. or rec.; 3 cr.

75. **METHODS OF SOCIAL RESEARCH.** The application of the historical survey, statistical and case methods to social data; the use of bibliography, definition and selection of the problem, determination of the data needed, collection and arrangement of data for presentation and

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exposition. Prereq.: Soc. 1 and 2, for majors in Sociology; without prerequisite for other students in Division of Social Science. 3 lec. or rec.; 3 cr.

84. METHODS OF SOCIAL PROGRESS. Efforts to improve social conditions and attain a larger measure of social justice; community experiments; development of modern social legislation; application of principles of insurance to social problems; various forms of mutual aids and philanthropy; endowments and special foundations. Mr. Coulter. Prereq.: Soc. 1 and 2. 3 lec. or rec.; 3 cr.

87. THE CHURCH IN AMERICAN SOCIETY. Contemporary organizations for worship in the community, their correlation, functions, and problems; the rise of the church and its relation to labor, the state, school, social welfare agencies; significance to the community of its organization and financing; church federation and union. Mr. Coulter. Prereq.: Soc. 1 and 2. 3 lec. or rec.; 3 cr.

88. RECREATION AND LEISURE. Problems arising from the increase of leisure time in modern society; typical leisure-time activities; theories of play; practical training programs in recreation; the function of leadership; analysis of types and qualities of leadership as exhibited by typical leaders; the material and program of leadership training. Mr. Moss. Prereq.: Soc. 1 and 2. 3 lec. or rec.; 3 cr.

89-90. DEVELOPMENT OF SOCIOLOGICAL THOUGHT. The history of sociological thought with special reference to the writings of Comte, Spencer, and the later writers of the nineteenth century; a comparison of contemporary sociological systems. Mr. Moss. Prereq.: Soc. 1 and 2. 3 lec. or rec.; 3 cr.

95, 96. SOCIOLOGICAL RESEARCH. A workroom course. Research projects will be set up in conference with the instructor and worked out individually or in groups. Emphasis is placed on techniques of gathering data and on presentation of the findings. Prereq.: 12 credits in Sociology including Soc. 75. 3 cr.

97, 98. SOCIAL SERVICE FIELD WORK. Designed to give the student an understanding of social work through observation and participation. Lectures, readings, and conferences will be offered during the college year. The field work requirement may be satisfied either during the college year in co-operation with neighboring social agencies or during the summer by eight weeks' work with other accredited social work institutions. The Department will arrange for a limited number of student summer placements with well supervised settlements, correctional institutions, and case work agencies in Chicago, Cleveland, Pittsburgh, Boston, and other urban centers. It is strongly recommended that students who can qualify should acquire this experience

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in the summer, following the Junior Year. In most cases agencies offer no remuneration beyond living expenses. Mr. Coulter. Prereq.: 12 credits of work in Soc. 3 cr.

COURSES PRIMARILY FOR GRADUATE STUDENTS

107. *SOCIAL TRENDS.* A study of the nature of social change; media in which it takes place; facilitating or retarding factors; differential rates of change among institutions; social lag; contemporary American ameliorative movements looking toward the improvement of the lot of the working man; public welfare programs; social security and social legislation. Mr. Coulter. Permission of the instructor. 3 lec. or rec.; 3 cr.

181, 182. *READING AND RESEARCH IN SOCIOLOGY.* With the consent of the instructor, a student prepared by training and experience to do independent work may register for a reading and research course. The student will undertake assigned problems and readings under the guidance of the instructor.

Social Control, Mr. Coulter; Consumer Credit, Mr. Coulter; Social Disorganization; Research Technique. 3 cr.

SPANISH

(See *LANGUAGES*, page 243.)

SPEECH CORRECTION

(See page 216.)

STENOGRAPHY

(See page 201.)

TEACHER PREPARATION

(See pages 128-135.)

THERAPY

(See *OCCUPATIONAL THERAPY*, pages 256-257.)

TYPING

(See page 201.)

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ZOOLOGY

GEORGE M. MOORE, *Associate Professor*; C. FLOYD JACKSON, *Professor*; CHARLES G. DOBROVOLNY, *Associate Professor*; EDYTHE T. RICHARDSON, *Associate Professor*; PAUL E. SCHAEFER, *Assistant Professor*; ERMA A. JACKSON, *Instructor*; MARY E. CUMMINGS, *Instructor*; MILDRED B. ADKINS, *Lecturer*; DALE E. GRIM, *Assistant*.

7. GENERAL ZOÖLOGY. Basic course for Zoölogy majors and pre-medical students. Systematic survey of the animal kingdom including consideration of the natural history and functional relationships. Accompanied by dissection in the laboratory of selected invertebrate types and the dogfish. Mr. Moore. Prereq.: Biol. 2, or Zoöl. 48. 2 lec. or rec.; 2 lab.; 4 cr.

8. COMPARATIVE ANATOMY. Fundamental principles of comparative vertebrate anatomy. Selected vertebrate types dissected in the laboratory. Mr. Moore. Prereq.: Zoöl. 7, 2 lec. or rec.; 2 lab.; 4 cr.

17-18. HUMAN ANATOMY AND PHYSIOLOGY. The structure and function of the human body, with a detailed study of the different systems. Collateral reading, written reports, and conferences. Mrs. Richardson. Prereq.: Biol. 2. 3 lec.; 3 cr.; optional laboratory, 4 cr.

19. KINESIOLOGY. A study of bodily movement. Special emphasis is given to the relation of skeleton, muscles, nerves, and joints in movement. Mrs. Adkins. Prereq.: Zoöl. 18. 3 lec. or rec.; 3 cr.

35. MAMMALOLOGY. A study of the mammals, their identification, life history, and economic importance with special reference to those of eastern North America. Designed for students interested in wildlife conservation, for secondary-school teachers, and for others interested in mammalogy as a hobby. Mr. Jackson. Prereq.: Biol. 2 or equivalent. 1 lec.; 2 lab.; or field trips; 3 cr.

36. ORNITHOLOGY. A study of birds, their identification, migration, life history, and economic importance with special reference to those of eastern North America. Designed for students interested in wildlife conservation, for secondary-school teachers, and for others interested in bird study as a hobby. Mr. Jackson. Prereq.: Biol. 2 or equivalent. 1 lec.; 2 lab. or field trips; 3 cr.

48. PRINCIPLES OF ZOÖLOGY. The principles of animal life, with special emphasis on human anatomy and physiology; the general principles of physiology, embryology, and genetics as applied to various forms of animals. *Required of Freshmen in Agriculture*. 2 lec.; 1 lab.; 3 cr.

49. GENETICS. A study of the physical basis of inheritance, expression, and interaction of the hereditary units, linkage, and variation. The application of Mendelian principles to plant and animal breeding.

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Mrs. Richardson. Prereq.: Biol. 2 or Bot. 1 and Zoöl. 48. 3 lec. or rec.; 3 cr.

ADVANCED COURSES IN ZOÖLOGY

All the following courses require Junior standing

51. PARASITOLOGY. An introductory course concerned with some of the more important parasites causing diseases of man and animals. Living materials will be used as far as possible. Prereq.: Biol. 2 and a year of Zoölogy. 2 lec.; 2 lab.; 4 cr.

52. PATHOLOGY. The principles of general pathology of vertebrates including man. The course is designed for students in the fields of Laboratory Technique, Nursing, and Applied Biology. Pre-medical students are strongly advised not to elect this course. Prereq.: Zoöl. 53, Bact. 1, and permission of the instructor. 2 lec.; 2 lab.; 4 cr. (Given in alternate years; not offered in 1948-1949.)

53. HISTOLOGY. This course gives the student a familiarity with the microscopical anatomy of the principal tissues and organs of vertebrates. Prereq.: Zoöl. 8 or 18. 2 lec.; 2 lab.; 4 cr.

54. EMBRYOLOGY. A study of the fundamental principles of development. The developmental process from the egg to the formation of the body and the establishment of the principal organs and systems. Prereq.: Biol. 2 and 4 credits of Zoöl. 2 lec.; 2 lab.; 4 cr.

56. INVERTEBRATE ZOÖLOGY. A survey of the major invertebrate groups, exclusive of insects, with emphasis on free-living forms. Evolution of various phyla and their ecological relationships. Mr. Moore. Prereq.: Zoöl. 7. Formerly given as Zoölogy 55. 2 lec.; 2 lab.; 4 cr. (Given in alternate years; not offered during 1948-1949.)

57, (57). LABORATORY TECHNIQUE. Methods in histologic technique and examination of blood, urinary sediments, parasites, and zoölogical preparations. Prereq.: Zoöl. 53 and permission of the instructor. 1 lec.; 3 lab.; 4 cr.

58. LABORATORY TECHNIQUE. Special problems in laboratory technique. Prereq.: Zoöl. 57 or 81 and permission of the instructor. 1-3 labs.; 1-3 cr.

59-60. GENERAL PHYSIOLOGY. The chemical and physical nature of the living substance. The processes of metabolism, movement of materials, irritability, response. Lectures, assigned topics, and laboratory experiments. Mrs. Richardson. Prereq.: Biol. 2, one year of Zoöl. and one year of Chemistry; 3 lec. or rec.; 1 lab.; 4 cr.

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64. **NEUROLOGY.** Practical study of morphology, physiology, and histology of the human nervous system. Mrs. Richardson. Prereq.: Biol. 2 and one year of Zoöl. 3 lec. or rec.; 1 lab.; 4 cr.

71, 72. **ECOLOGY OF THE LAND VERTEBRATES.** A study of the habitat and ecological relationship of the land vertebrates with special reference to their conservation. Field methods and techniques as applied to the study of these groups will be considered. Mr. Jackson. Prereq.: 12 hours of Biology. 2 lec.; 1 lab.; 3 cr. (Given in alternate years. Offered in 1948-1949.)

73, 74. **ECOLOGY OF THE FRESH-WATER VERTEBRATES.** The identification, habits, habitat, ecological relationship of the fish, amphibia, and reptiles of North America, with special reference to those forms occurring in eastern United States. Special consideration will be given to their conservation and ecological relationship. Field methods as applied to aquatic forms will be considered. Mr. Jackson. Prereq.: 12 hours of Biology. 2 lec.; 1 lab.; 3 cr. (Given in alternate years. Not offered in 1948-1949.)

75, 76. **MARINE BIOLOGY AND OCEANOGRAPHY.** A study of marine life with special emphasis on the economic species of fish and shellfish of the northeastern Atlantic coast. Problems concerning their utilization and conservation, together with special methods in oceanography, will be considered. Mr. Jackson. Prereq.: 3 years' work in Biology. 2 lec.; 1 lab. 3 cr. (Not offered during regular college year 1948-1949.)

81. **LABORATORY METHODS.** Preparation of biological material for the classroom; instruction in making models, aquaria, and collecting and preparing specimens for class demonstration; histology, technique, and hematology. Prereq.: 12 hours of Biology and permission of the instructor. 1 lec., 2 lab.; 3 cr. (Offered only in summer.)

96. **LIMNOLOGY.** Factors affecting biological productivity of fresh-water lakes and streams. Adapted primarily for students interested in fish and game management, wild life conservation, and in teaching of Biology. Mr. Moore. Prereq.: Permission of the instructor. 2 lec.; 2 lab.; 4 cr. Given in alternate years. (Offered in 1948-1949. Formerly given as Zoölogy 95.)

97, 98. **SPECIAL PROBLEMS AND SEMINAR.** Seminar discussions on current zoölogical literature conducted each week. Advanced students may elect a special problem provided they present a detailed outline of the subject and can furnish adequate proof of their ability to carry it out with equipment available. Mr. Moore and members of the staff. Prereq.: Permission of the Department Chairman. 1-4 cr.

BIOLOGY-EDUCATION (Bi-Ed) 91. PROBLEMS IN THE TEACHING OF HIGH SCHOOL BIOLOGY. Objectives and methods of teaching. The selection and organization of materials; visual aids; setting up aquaria and

ZOOLOGY

other projects will be stressed. Mr. Schaefer. Prereq.: Two years of Biological Science and Ed. 61. (See page 206.) 2 rec.; 1 lab. or field trip; 3 cr.

EDUCATION-BIOLOGY (ED-B1) 93, 94. SUPERVISED TEACHING IN HIGH SCHOOL BIOLOGY. See page 207.

COURSES PRIMARILY FOR GRADUATE STUDENTS

101, 102. ADVANCED VERTEBRATE TAXONOMY AND ECONOMIC FIELD ZOOLOGY. A critical examination of select groups of vertebrates with special reference to local forms, their classification, distribution, and general ecology and conservation. The laboratory work will deal with economic field Zoölogy and will consist of life history studies, detailed ecological surveys of local areas, control of injurious animals, food habit studies, census taking, and studies of factors controlling animal population. Mr. Jackson. Prereq.: 3 years' work in Biology. 2 lec.; 2 lab.; 4 cr.

107, 108. BIOLOGY OF DEVELOPMENT. A study of the factors involved in the structure of the cell, histogenesis, and in organogeny. The problems related to cell structure and function will be discussed. Cell specificity, physiological maturity, symmetry, organization, rate of development and maturation will be considered. Prereq.: Three years' work in Biology, including Histology and Embryology. 2 conferences or rec.; 2 lab.; 4 cr.

111, 112. PROBLEMS IN BIOLOGY. This course involves reading, laboratory work, and conferences on special problems approved by the staff. Mr. Moore and staff. Prereq.: Permission of the Department Chairman. 1-4 cr.

SUMMARY OF REGISTRATION

FOR CATALOGUE	AGRICULTURE				LIBERAL ARTS				TECHNOLOGY				MISCELLANEOUS				TOTAL															
																					MEN				WOMEN				BOTH			
	1946-47	1945-46	1944-45	1943-44	1946-47	1945-46	1944-45	1943-44	1946-47	1945-46	1944-45	1943-44	1946-47	1945-46	1944-45	1943-44	1946-47	1945-46	1944-45	1943-44	1946-47	1945-46	1944-45	1943-44	1946-47	1945-46	1944-45	1943-44				
Senior.....	33	11	2	4	311	172	171	136	136	33	13	38	219	77	26	57	379	132	28	29	186	128	158	121	405	205	184	178				
Junior.....	47	14	4	1	443	287	157	172	124	37	13	12	379	132	28	29	840	245	51	54	213	247	202	146	626	334	174	185				
Sophomore.....	76	27	5	9	648	407	241	201	124	39	9	28	840	245	51	54	1173	669	209	133	237	233	330	269	1053	531	259	238				
Freshman.....	137	79	15	15	870	534	422	316	143	63	27	38	1173	669	209	133	143	669	209	133	237	233	330	269	1410	902	539	402				
Special.....	9	12	2	5	71	51	28	34	14	11	..	..	59	59	4	13	59	59	4	13	44	29	27	29	103	88	31	42		
Graduate.....	..	..	..	..	..	..	..	..	143	63	27	38	104	42	13	18	104	42	13	18	39	21	14	20	143	63	27	38
Total — regular curriculums.....	302	143	28	34	2343	1451	1019	859	157	74	27	38	2774	1224	331	304	2774	1224	331	304	966	899	883	779	3740	2123	1214	1083				
Non-degree curriculums																																
2nd yr.....	18	6	3	1	8	10	12	9	16	6	3	1	59	37	12	5	16	6	3	1	10	10	12	9	26	16	15	10				
1st yr.....	60	40	14	5	17	30	22	..	59	37	12	5	75	43	15	6	59	37	12	5	1	20	32	22	60	57	44	27				
Total.....	78	46	17	6	8	27	42	31	75	43	15	6	75	43	15	6	75	43	15	6	11	30	44	31	86	73	59	37				
Vocational Agriculture.....	15	42	43	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	15	42	43
Summer School.....	..	..	..	..	..	..	..	..	1194	364	620	778	852	101	210	310	852	101	210	310	342	263	410	468	1194	364	620	778
U.S. War Training courses																																
On campus.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	..	..	..	..	..	..	..	..	..	..	..	11
Off campus.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	34	..	..	..	..	..	..	..	..	..	..	..	362
Total War Training.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	34	..	..	..	..	..	..	..	..	..	..	..	376
Extension courses.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	350	..	..	..	..	..	..	..	..	..	..	..	387
Total—short curriculums	78	61	59	49	8	27	42	31	396	122	172	309	330	83	102	130	396	122	172	309	66	39	70	179	396	122	172	309				
STAR Unit.....									1590	486	1154	1474	1257	242	703	839	1257	242	703	839	419	332	522	715	1676	574	1255	1554				
ASTP.....									..	..	..	..	..	..	..	1383	..	..	..	..	..	..	..	..	..	..	..	1383
ASTRP.....									..	..	..	..	..	..	..	54	..	..	..	..	..	..	..	..	..	..	..	362
GRAND TOTAL.....	380	204	87	83	2351	1478	1061	890	1747	560	1508	3996	4031	1466	1361	3627	1747	560	1508	3996	1385	1231	1435	1494	5416	2697	2796	5121				
Less Duplicates.....	..	..	..	..	..	..	..	..	739	87	293	654	653	33	133	415	739	87	293	654	86	54	160	239	739	87	293	654
NET GROSS TOTAL.....	380	204	87	83	2351	1478	1061	890	1008	473	1251	3342	3378	1433	1228	3212	1008	473	1251	3342	1299	1177	1275	1255	4677	2610	2503	4467				

*Excludes 229 duplicates this year.

The curriculums included in the three colleges are: Agriculture—Agricultural Chemistry, Agricultural Economics, Agricultural Engineering, Agronomy, Animal Husbandry, Dairy Husbandry, Entomology, Forestry, General, Horticulture, Poultry Husbandry, Pre-Veterinary, and Teacher Training; Liberal Arts—Art Education, Business, General, Home Economics, Hotel Administration, Music Education, Nursing, Occupational Therapy, Physical Education, Secretarial, Social Service, Teacher Training, Pre-Medical; Technology—Building Construction, Chemistry, Chemical Engineering, Civil Engineering, Electrical Engineering, Mechanical Engineering, and Physics.

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[illegible]

